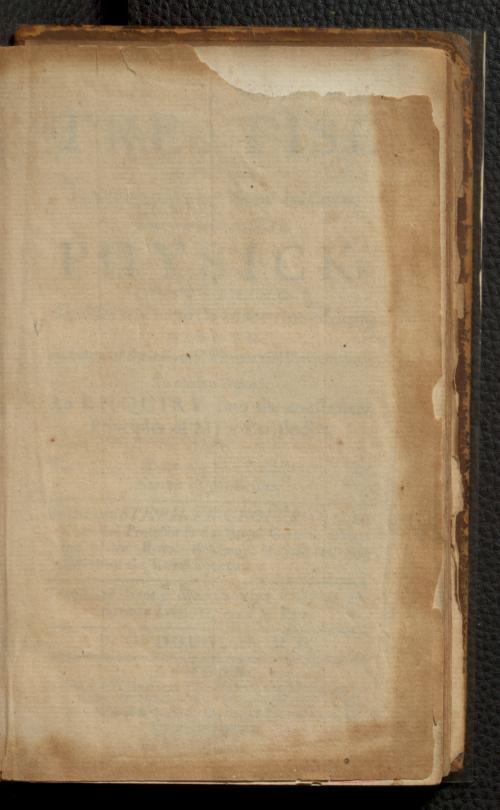
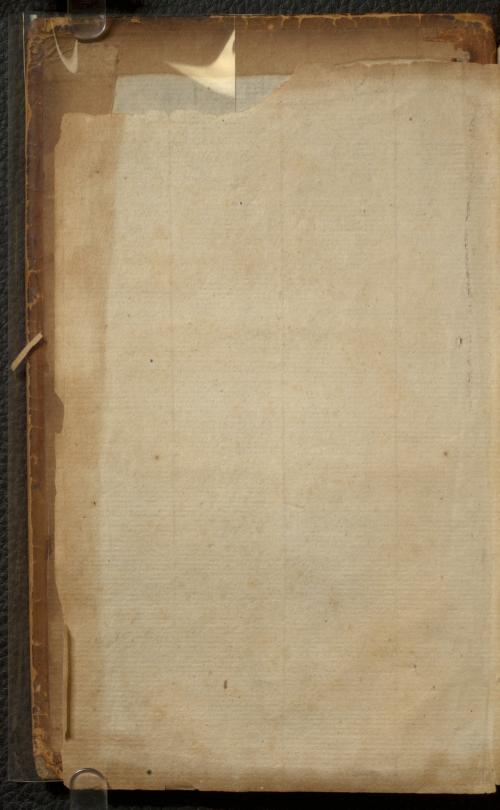


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TREATISE

OFTHE

Fossil, Vegetable, and Animal Substances,

That are made Use of in

PHYSICK.

CONTAINING

The HISTORY and DESCRIPTION of them;

WITHAN

Account of their feveral Virtues and Preparations.

To which is Prefixed,

An ENQUIRY into the constituent Principles of MIXED Bodies,

AND

The proper METHODS of Discovering the Nature of Medicines.

By the late STEPH. FR. GEOFFROT, M.D. Chemical Professor in the Royal Garden, Member of the Royal Academy of Sciences, and Fellow of the Royal Society.

Translated from a MANUSCRIPT COPY of the Author's Lectures, read at Paris.

By G. DOUGLAS, M.D.

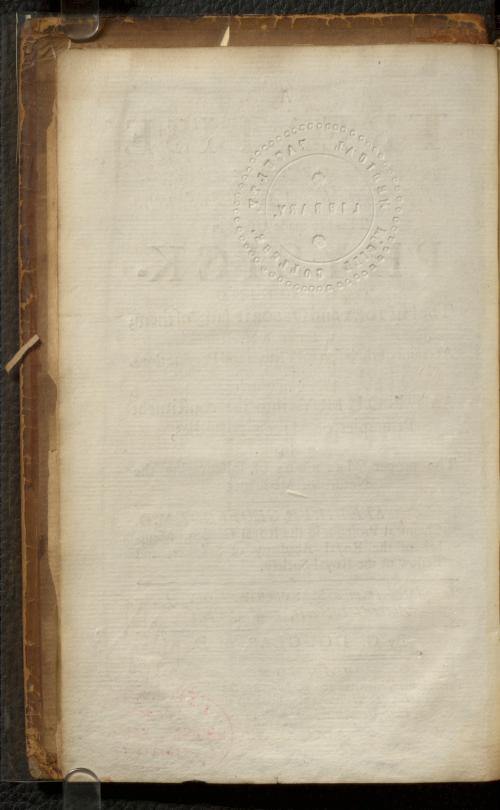
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M DCC XXXVI.

MEDICAL FACULTY

MeGILL





PREFACE.

the following Discourse, it may be requisite to give him some Account of the Author, from whence he may the better be

able to judge, how well qualified he was for the Work he has undertook, and how juffly

it has deserv'd to be made publick.

* STEPHEN FRANCIS GEOFFROY, Doctor of Physick, was born at Paris, on the 13th of February, 1672. His Father, Matthew Francis Geoffroy, was a considerable Apothecary, and his Mother the Daughter of a celebrated Chirurgeon; so that he seems to have had a kind of hereditary Title to Skill in his Profession.

In his Education, his Father spar'd for no Pains or Expence, that could contribute to his Son's Improvement. Whilst he was engaged in the Study of Natural Philosophy, he had regular Conferences held at his House, in which the most eminently Learned in every



^{*} Hist. de l'Acad. Royale, &c. An. 1731. p. 93.

Branch of that Science bore their respective Parts. Thither M. Cassini brought his Astronomical Instruments, F. Sebastien his Machines, and M. Joblot his Magnets; M. du Verney was Operator in Anatomy, and M. Homberg in Chemistry. And these Conferences were carried on with fo much Judgment, and fuch apparent Usefulness, that they became the Model and Foundation of the feveral Courses of Experiments, which have fince been given in the Colleges of Paris. Yet in all these the Father had no other Aim than the Instruction of a Son, whom he designed to bring up to his own Business, and leave behind him a Successor in his Shop. But he knew how large a Share of Knowledge was required to arrive at Perfection in Pharmacy, and was unwilling to omit any Circumstance, that might contribute to make him Master of a Profession, which he had followed with fo much Advantage himself, both in point of Pleasure and Profit.

To this Study of Physicks in general, M. Geoffroy joined private Courses of Botany, Chemistry, and Anatomy; though these Sciences did not wholly engross his Application. His leisure Hours were usually spent in frameing of Optick Glasses, in forming little Machines, or in learning Italian, of the famous Abbé Roselli, so well known by the Romance of the Unfortunate Neapolitan.

IN 1692. his Father fent him to Montpellier, to reside with a noted Apothecary there, whose Son he took to Paris in Exchange,

that

that by this means he might become acquainted with the different Methods of Practice, and be able to learn abroad, what perhaps might have escaped his Notice at home. M. Geoffroy, whilst in that University, diligently attended upon the Lectures of the most learned Professors in that samous School, and there laid the Foundations of that high Reputation, which he afterwards gained, and was so justly due to his Merit.

BEFORE he returned to Paris, he travel'd into the Southern Parts of the Kingdom, visited the Sea Ports, and whatever else stood recommended as an Object deserving his Attention. But his Curiosity had like to have cost him dear; for in 1693, he was blocked up in the Town of St. Malo, at the Time it was bombarded by the English, and in all Probability would have perish'd in its Ruins, if the terrible Machine, which play'd upon the Town, had not fail'd of its Effect.

In 1698. Count Tallard, being appointed Embassador Extraordinary into England, made choice of M. Geossiroy, to attend him in his Embassy, though he had then taken no Degree in Physick; nor was he afraid to entrust the Care of his Health to a Person of his Merit, though at that Time undistinguish'd by any Title. M. Geossiroy, who knew the Advantages of travelling, took care to make all possible Improvements, during the Time of his Residence at London. He gain'd the Friendship and Acquaintance of most of the learned Men in the Country, and in less than fix A 3

Months was admitted a Member of the Royal

Society.

FROM thence he passed into Holland, where he became acquainted with other Men of Learning, made farther Observations, and acquired still greater Improvements. In 1700 he travel'd into Italy, in the Company of Abbé Louvois, under the Character of his Physician, as himself phras'd it; but in the Lan-

guage of the Abbé, as his Friend.

NATURAL History, and the Materia Medica, were the great Objects, which M. Geoffroy had always in his Eye; and he was the more oblig'd to turn his Views that way, as it was his Father's Design to leave him in his Business. In 1693 he underwent an Examination for Pharmacy, and pass'd through all the usual Forms upon that Occasion; but his Inclinations lay still towards being a Physician, though he had hitherto been afraid of declaring them. He directed his Studies however in fuch a manner, as to answer at the same time both his Father's Intentions, and his own; and thus the Materia Medica principally engag'd his Application, which a good Apothecary cannot be too well acquainted with, and a Physician does often not know so well, as the Nature of his Profession requires.

BUT at last, when the Time came that he could no longer dissemble, he let his Father into his Purpose, and gain'd his Consent: He had design'd his second Son for a Physician, whom by an easy Exchange he sent into the Shop, instead of his Brother; and he is now become one of the Chemists to the French Aca-

demy.

M. Geoffroy took his Degree of Bachelour of Physick, in 1702. His first Act was put off for some time, because M. Fagon the King's first Physician, whose Office it was to preside as Professor in that Exercise, which was usually performed by a Deputy, was refolv'd to attend in Person. The Thesis is generally drawn up by the President; but M. Geoffroy made his himself, and maintain'd the Affirmative of this Question, that the Practical Part of Chemistry was a necessary Qualification to a Physician. His other Exercises were all of his own Composition, and especially those requir'd for his Doctor's Degree, which he took in 1704. They were all upon Subjects of Consequence; and one of them upon the Question, whether the human Fætus was not a Worm in its first Formation, so raised the Curiofity of the Ladies, that he was oblig'd to translate it into French, in order to let them into the Secret of certain Mysteries, which had before not fallen under their View. All his Theses are said to have been look'd upon, in the Schools of Paris, as so many finished Discourses upon select Subjects, and were much better received by Foreigners, than fuch Performances generally are, which for the most part are more remarkable for their Style than their Matter.

HE did not hastily throw himself into Practice so soon as he was privileg'd to do it, but thut himself up ten Years in his Study,

that he might be fure of having laid up a good Fund of Knowledge, before he enter'd on the Use of it. Physicians have amongst them what they call Good Principles, and for this very Reason because they are good, they are not conformable to the Practice of the Generality of Mankind. M. Geoffroy's Brethren allow, that he was Master of them in the most persect Degree. His calm, circumspect, and it may be somewhat timid Disposition, render'd him very attentive to listen to Nature, not to disturb her with Medicines. under Pretence of assisting her; nor to assist her improperly, or otherwise than as herself required. One particular Circumstance did him an Injury at his first setting out. He was too much concerned for his Patients, and the Sense of their Condition brought upon him an Air of Melancholy, which for a time alarm'd them; till at length, when they had discover'd the Cause of it, they found themfelves oblig'd to him for the Expression of so uncommon a Tenderness, and withal so agrees able to Persons in Distress.

As he was persuaded that every sick Man had an equal Share in his Physician, he made no Difference in his Attendance between good Patients and bad ones, betwixt People of Fashion and Persons of a meaner Station. He was not sollicitous after the best Business, nor refus'd any that offer'd. From whence it is easy to conclude, that the major Part of his Patients were of an inferior Rank; and the more so, as his first Engagements were ever

facred to him, and the most promising Occafions could not prevail upon him, either to break through them, or flightly discharge em. Besides this, he was entirely free from all Appearance of Vanity. He was none of those, who take pains to spread abroad their own Reputation, and have the Art of whispering to Fame, what they would have her repeat aloud with all her hundred Mouths. But the Truth took place at last, and M. Geoffroy's Merit came well to be known. In Cases of Consequence, the Physicians of best Note always call'd him into Consultation, and from him it was that all others were defirous to learn. Tu'ly concludes, that the Romans must have been the most valiant People in the World, because though every Nation claim'd to it self the first Rank for Valour, they constantly allow'd the second to the Romans.

IN 1709, the King gave him the Place of Physick Professor, in the College Royal, vacant by the Death of M. de Tournesort. He undertook to dictate to his Audience the whole History of the Materia Medica, upon which he had long before made large Collections; nor have we any thing more curious and compleat, than what he has left us upon this Subject. All that he had dictated, was found amongst his Papers in good Order, after his Decease. And it is from these Lectures that the following Discourse is translated, which

we now lay before the Publick.

M. Fagon, though he retained the Title of Chemistry Professor in the Royal Garden, had

the Place supplied by a Deputy. M. de St. Ton, upon whom he had confer'd this Employment, becoming uncapable of performing it, through his many Infirmities, in 1707 M. Geoffroy was put into his Place, and acquitted himself so well in it, that in 1712 M. Fagon absolutely resign'd the Charge up to him. M. Fagon, that M. Geoffroy might not want Employment, defired that to his ordinary Lectures of Chemistry he would superadd others on the Materia Medica, which would extend the usual Sitting from two to four, and sometimes five Hours. M. Geoffroy readily confented, through a Zeal for the Service of the Publick, and without Doubt influenced likewife by a Sentiment of Glory, which has its Effect, as in Reality it ought, upon Minds that are the most remote from Ambition or Vanity. And he had the Pleasure of seeing, that fuch long Sittings were fo far from discouraging his Audience, that they thereby became more diligent and more attentive. Hercin, however, he too little consulted the Interest of his own Health, which, as he was naturally of a weak Constitution, was much injured by it.

The Faculty of Physick, who are accustom'd to chuse a President once in two Years, whom they call the Dean, found themselves in such Circumstances in 1726, as made it necessary to make choice of one, who, though worthy of the Employment, might give no Umbrage to their Liberty, and have a greater Regard for the Society, than his own private Advancement. The Election sell upon M. Geof-

froy.

froy. But as all the Members of a Republick are not alike well-affected to the Good of the State, there were certain of them, who opposed his Election under the Pretence of some fancied Irregularity in the Proceeding; and he would have willingly been himself of their Party; but the Election was confirmed by the

Judgment of the Court.

Upon the Expiration of the two Years he was to pass in this Office, he was continued in it by the very Votes which had formerly opposed him. There had arose a Dispute between the Physicians and Surgeons, a kind of Civil War, which divided the Members of the faid Commonwealth; and this required either Zeal to carry it on, or Temper to put an End to it; or rather, it could not be carried on, as it ought, without an Intermixture both of Temper and Zeal. They did him a fingular Honour upon this Occasion. There is usually under the Dean an Officer, nam'd the Cenfor, who is a kind of Deputy to him. This Title of Cenfor was suppress'd for the two fucceeding Years of M. Geoffroy's Presidentship; and he was left at free Liberty to chuse whomsoever he pleas'd to affist him. Though these Testimonies of Esteem, paid him by the Society, were unfought by his own Ambition, yet had he a lively Sense of them, from a Principle of Gratitude, which is the stronger in such Persons as are disengaged from any violent Passion. He gave himself up, without Referve, to the extraordinary Labours of this last Employment, which, join'd to those those required by his Profession, and the different Places he held, quite ruin'd his Health, and in the Beginning of the Year 1730, he sunk under the Burden of his Fatigues. He had Courage, however, to put the last hand to a Publick Dispensatory, which the Deans, his Predecessors, had judged necessary, but had left unfinish'd.

HE was made a Member of the Royal Academy of Sciences in 1699, and the printed Transactions of that Society shew, that he discharg'd his Duty in that Capacity with no less Faithfulness than in all others, except that in the four last Years of his Life, his Attendance upon the Business of the Faculty was a Dispensation sufficiently excusable. He drew up in 1718 a fingular System, with a Table of the Affinities or Relations which different Substances in Chemistry bear to each other. These Affinities gave Offence to some particular People, who were apprehensive they might be only Attractions disguised, and so much the more dangerous, as some Persons of eminent Learning had already cloathed them in feducing Forms; but they foon grew fensible that this was an unnecessary Scruple, and that M. Geoffroy's Table might well be admitted; which, if rightly understood, and carried on to the utmost Degree of Exactness, might become a fundamental Law for Chemical Operations, and guide the Operator with Success. He died on the 6th of Fanuary, 1731.



THE

CONTENTS.

| Page | |
|--|-----|
| HE INTRODUCTION, | |
| CHAP. I. Definition and Division of Me- | |
| dicines ibid. | |
| CHAP. II. The Principles of Bodies in ge- | - |
| neral5 | 5 |
| CHAP. III. The Principles of Bodies in particular |) |
| Art. I. Fire ibid | |
| Art. II. Water | |
| Art. III. Earth | |
| Art. IV. Salt | - |
| Art. V. Oil or Sulphur CHAP IV The Mixture of Elements | |
| CHAP. IV. The Mixture of Elements CHAP. V. The Manner of Discovering the Virtues of | 360 |
| Medicines 2 | |
| The state of the s | |
| PART II. | |
| The Mineral Kingdom. | |
| SECT. I. Of WATERS. | |
| CHAP. I. Of the more Simple Waters 4 | 2 |
| CHAP. II. Of Mineral Waters 4 | |
| Art. I. Of Mineral Waters wixed with Earthy Par | |
| | .8 |
| | 9 |
| | 2 |
| Art. IV. Of Waters impregnated with Metallic | |
| Particles 5 | 3 |

| | Page |
|--|-------------|
| SECT. II. Of EARTHS. | |
| CHAP. I. Of Clays, properly so called Art. I. Of the Lemnian Earth | 55 |
| Art. I. Of the Lemnian Earth | 56 |
| Art. 11. Of the Earth of Malta | 59 |
| Art. III. Of German Sealed Earths | ibid. |
| CHAP. II. Of Marles | 60 |
| CHAP. III. Of Boles | 61 |
| CHAP. IV. Of Chalks | 63 |
| SECT III OGG | |
| SECT. III. Of STONES. | |
| CHAP. II. Of the Lime-stone, and Lime CHAP. II. Of Talck | 65 |
| CHAP. III. Of the Eagle Stone | 67 |
| CHAP IV Of the Fold Recognition Chan | 68 |
| CHAP. IV. Of the Fossil Bezoardic Stone CHAP. V. Of Figured Stones | 69 |
| Art I Of the Relempites on I are I | ., 70 |
| Art. I. Of the Belemnites, or Lapis Lyncis Art. II. Of the Lapis Judaicus | |
| CHAP VI Of Come Storm Subfaces | 71 |
| CHAP. VI. Of some Stony Substances | 72 |
| Art. I. Of the Gloffopetra | ibid. |
| Art. II. Of the Fossil Unicorn | 73 |
| CHAP. VII. Of Opake Precious Stones Art. I. Of the Lapis Lazuli | . 74 |
| Art. II. Of the Armenian Stone | ibid. |
| CHAP VIII Of Gome on Pollucid Dussies Char | 76 |
| CHAP. VIII. Of Gems, or Pellucid Precious Stone Art. I. Of Crystal | |
| Art. II. Of other Transparent Precious Stone. | 1bid. |
| have been commonly used in Physick | |
| Art. III. Of some Gems, never, or very se | 78 |
| used in Physick | |
| and a soften | 82 |
| SECT. IV. Of SALTS. | |
| CHAP. I. Of Alimentary Salt | 0. |
| Art. I. Of Fossil Sal, or Sal Gem | 84. |
| Art. II. Of Sea-Salt | 85 |
| CHAP. II. Of the Nitre, or Natrum, of the Anci | ionts |
| and the modern Nitre, or Salt-Petre | |
| CHAP. III. Of Vitriol | 94 |
| | 107 HAP. |
| | nar. |

| The CONTENTS. | XV |
|---|--------|
| | Page |
| CHAP. IV. Of Alum | 114 |
| CHAP. V. Of Sal Ammoniac | 121 |
| CHAP. VI. Of Chrysocolla and Borax | 128 |
| P4 111 | |
| SECT. V. Of BITUMINOUS JUICES. | |
| CHAP. I. Of Liquid Bitumens | 133 |
| Art. I. Of Naphtha, or Petroleum Art. II. Of Pissaphaltum CHAP. II. Of Solid Bitumens | ibid. |
| Art. II. Of Pissasphaltum | 135 |
| CHAP. II. Of Solid Bitumens | 137 |
| Art. 1. Of the Duumen Judateum | ibid. |
| Art. II. Of Ambergrease | 138 |
| Art. III. Of Amber | 142 |
| Art. IV. Of Jet, and Fossil Coal | 147 |
| CHAP. III. Of Sulphur | 149 |
| CHAP. IV. Of Arsenical Juices | 159 |
| Art. I. Of Orpiment | 160 |
| Art. II. Of Realgar | 163 |
| Art. III. Of Arsenick, properly so called | 166 |
| SECT. VI. Of METALLICK FOSSILS. | |
| CHAP. I. Of Metallick Fossils, which contain Pa | rts of |
| some true Metal | 171 |
| Art. I. Of the Lapis Hamatitis, or Bloodstone | ibid. |
| Art. II. Of Smyris, Loadstone, Magnesia, an | d Pe- |
| tracorium | 176 |
| Art. III. Of the Lapis Cadmia, Lapis Galami | naris, |
| Tutty, Pompholyx, and Spodium | 179 |
| Art.IV. Of Chalcitis, Mify, Sory and Melanteria | |
| CHAP. II. Of Metallick Fossils of a peculiar N | ature, |
| called Metals by some | 189 |
| Art. I. Of Antimony | ibid. |
| Art. II. Bismuth | 209 |
| Art. III. Zinch | 210 |
| Art. IV. Cinnabar and Quickfilver | 214 |

xvi The CONTENTS.

| XII THE CONTENTS | |
|--|----------|
| | Page |
| SECT. VII. METALS. | 8 |
| CHAP. I. Of Imperfect Metals | 239 |
| Art. I. Lead | ibid. |
| Art. II. Tin Art. III. Iron | 249 |
| Art. IV. Copper | 253 |
| CHAP. II. Of Perfett Metals | 266 |
| Art. I. Silver | 272 |
| Art. II. Gold | ibid. |
| Of Said Bitumers | 278 |
| Of the Blumer Judai um | |
| PART III. | |
| Vegetable Substances. | |
| tel | |
| SECT. I. Roots. | |
| 1. Radix Acori. Acorus Root. | 284 |
| 2. Anchusa Orientalis. Alkanet of the Leva. | |
| 3. Behen. Ben. | 286 |
| 4. Butua, sive Pareira Brava Lusitan. Brava. | Pareira |
| 0 | ibid. |
| yerva. | Contra- |
| 6. Costus sive Costum Offic. Costmary. | 287 |
| 7. Curcuma & Terra merita Offic. Cyperus | Indicus |
| Diascorid. Turmerick. | ibid. |
| 8. Cyperus Offic. | 280 |
| 9. China Officin. Chinna vel Schinna Tabern | næmont. |
| China Root. | ibid. |
| 10. Galanga Offic. Galangal. | 290 |
| 11. Hermodactylus Officin. Hermodactyl. | ibid. |
| 12. Jalappa seu Jalapium Offic. Mechoacanno | a nigra |
| quorund. Jalap. | ibid. |
| 13. Ipecacuanha, Radix Brafiliensis. | 291 |
| 14. Iris Florentina. Florentine Orice, or Flow Luce. | |
| 15. Mechoacanna Offic. Rhabarbarum album qu | 293 |
| Mechoacan. | ibid. |
| | Vardus. |
| 10.1 | tiri was |

| The CONTENTS. xvii |
|--|
| 16. Nardus. Spikenard. Page 294 |
| 17. Nisi. Geng-seng Sinensium. Garen-toguen Hiro- |
| quæorum. ibid. |
| 18. Pyrethrum Offic. Pellitory of Spain. 295 |
| 20 Rhahanhanum Cou Rhoum Offic, Rhubarb, 206 |
| 20. Rhaponticum Offic. True Rhapontick. 297 |
| 21. Saleb, vel Serapius Turcar. & Offic. ibid. |
| 22. Sarsaparilla, Salsa-Parilla, or Zalsa Parilla Of- |
| ficin. ibid. |
| 23. Sima Ruba ibid. |
| 24. Serpentaria Virginiana Viperina; Aristolochia seu |
| Pistolochia Virginiana. Snake Root. 298 |
| 25. Turpethum Officin. Turbith. ibid. |
| 26. Zedoaria Offic. Zedoary. ibid. |
| 27. Zinziber seu Zingiber Offic. Ginger. 299 |
| District for 218 |
| SECT. II. BARKS. |
| 1. Cassia Caryophyllata, & Cinnamomum Americanum |
| Officin. Canelle Gerofflée Gallor. 300 |
| 2. Cassia Lignea, Cassia Odorata, & Hylocassia Offic. |
| Woody Caffia. ibid. |
| 3. Cinnamomum Officin. Cassia Zeilanica, C. B. P. |
| Cinnamon. |
| A Cortex Winteranus, Canella Magellanica, Cinna- |
| momum Magellanicum, Winter's Bark. 303 |
| momum Magellanicum. Winter's Bark. 303 5. Cortex Ligni Guaiaci. Lignum Vitæ Bark. ibid. |
| 6. China Chinæ. Kina-Kina. Cortex Peruvianus Offic. |
| The Peruvian, or Jesuit's Bark. 303 |
| 7. Kina-Kina Aromatica, Palo de Calenturas, Casca- |
| rilla, Cortex Eleterii sive Scacarilla Officin. Cor- |
| ten Peruvianus grifeus sive spurius. 307 |
| 8. Costus Caryophyllatus 308 |
| 9. Cortex Tamarisci. Tamarisc Bark. ibid. |
| The Films Indian, Maintain Onice |
| SECT. III. Woods. |
| 1. Agallochum & Xylo-Aloes Officin. Pao Agula. |
| Aloes Wood. |
| 2, Acajouanum Lignum ibid. |
| b 3. Arundo |
| |

xviii The CONTENTS.

| | Page |
|---|---------|
| 3. Arundo Saccharifera. The Sugar Cane. | 310 |
| 4. Aspalathum Officin. | ibid. |
| 5. Brasilianum Lignum. Brasil Wood. | ibid. |
| 6. Calamus Aromaticus verus Officin. | ibid. |
| 7. Campechianum Lignum. Log-wood. | ibid. |
| 8. Cedrinum Lignum. Cedar-wood. | ibid. |
| 9. Citrinum Lignum. Lignum Jasmini. | 311 |
| 10. Colubrinum Lignum | ibid. |
| 11. Ebenus Officin. Ebony. | ibid. |
| 12. Fætidum Lignum. Kafulai Malabarorum. | Stink- |
| ing Wood. | 312 |
| 13. Guajacum Lignum, Lignum Sanctum, Palu. | s Vitæ. |
| Guajacum Wood, or Lignum Vitæ. | ibid. |
| 14. Literatum Lignum. Lignum Sinense. L | etter'd |
| Wood. | ibid. |
| 15. Nephriticum Lignum Offic. | ibid. |
| 76 Rhodium Lignum. Role-Wood. | 313 |
| 17. San-Lucianum Lignum, Santa Lucia Wood | . ibid. |
| 18. San Marthanum Lignum. | 314 |
| 19. Santalum Officin. Saunders. | ibid. |
| 20 Sassafras Offic. | ibid. |
| 31 Sassafras spurium, sive Lignum Anisatum. | 315 |
| 22. Violaceum Lignum. Lignum Polyxandrinum | . ibid. |
| 23. Xylo-Balfamum. | ibid. |
| the City of the The Way Persons Office | 9.9 |
| SECT. IV. FLOWERS and LEAVES. | |
| 1. Alcanna Offic. Kenna Turcar. & Mauror. | 316 |
| 2 Distamnus Creticus Offic. Dittany of Crete. | ibid. |
| 3. Carthamus Officin. Bastard Sastron. | ibid. |
| 4. Crocus Officin. Saffron. | 317 |
| 5. Cassine Vera Floridanorum. | ibid. |
| 6. Folium Indum, Malabathrum Offic. | 318 |
| 7. Juncus Odoratus, Scananthe Offic. | ibid. |
| 8. Senna Offic. | ibid. |
| 9. Thea Sinensium, Icha Isia Japonens. Tea. | 319 |
| August review Valence on the second of the second | |

SECT.

| The CONTENTS. | xix |
|--|---|
| 111 11 11 11 11 11 11 11 11 11 | Page |
| SECT. V. FRUITS. | - "6" |
| 1. Acajou Nux | 321 |
| 2. Anacardium Offic. | ibid. |
| 3. Amomum Racemosum. | 322 |
| 4. Anisum Sinense, Semen Badian. Fruetus | Stel- |
| latus. | ibid. |
| E. Aracus Aromaticus, Vanilla Offic. Vanillio. | 323 |
| 6. Areca Offic. Faufel Pynang Bontin. | ibid. |
| 7. Baccæ Bermudenses, Pilulæ Saponariæ | Anglo- |
| rum. | ibid. |
| 8. Ben sive Glans Unguentaria Offic. | ibid. |
| 9. Becuiba Nux. | 324 |
| 10. Cacao Officin. | ibid. |
| 11. Coffee Officin. Cabve Tartar. | ibid. |
| 12. Cardamomum Offic. | 325 ibid. |
| 13. Carpobalfamum Offic. | ASSESSMENT OF THE PARTY OF THE |
| 14. Caryophylli Aromatici. Cloves. | 326 1bid. |
| 15. Cassia Fistula, seu Solutiva Officin. | A STORE |
| 16. Cocci Orientales, Cocculæ Officinar. | 327 ibid. |
| 17. Colocynthis Officin. Coloquintida. | 328 |
| 18. Cubebæ Officin. Cubebs. 19. Folliculi Sennæ. | ibid. |
| 35 77 : | ibid. |
| At ACCI Nixtmore | 329 |
| 21. Nux Mojepara. Nutrieg. 22. Nux Vonica. | ibid. |
| 23. Nux Vomica legitima. Faba Sancti Ignatii. | Faba |
| Purgatrix. | 330 |
| 24. Piper Indicum. Pepper. | ibid. |
| 25. Piper Longum. Macro-Piper. Long Peppe | r. 331 |
| 26. Piper Jamaicense. Jamaica Pepper. | ibid. |
| 27. Piper Æthiopicum Officin. siliquosum, J. F. | 3. Ni- |
| grum oblongum, J. B. | ibid. |
| 28. Ricini Americani majoris Grana | ibid. |
| 29. Ricini Americani minoris Grana. Avellan | |
| gatrix Riverii | ibid. |
| 30. Telli Grana, seu Tellina Officin. | 332 |
| b 2 2I | . Ricini |

| XX The CONTENT: | 5. |
|---|-----------|
| | Page |
| 31. Ricini vulgaris Grana, seu Grana Pali | |
| Kiki. | |
| | 332 |
| 32. Stapbidis Agriæ Semen. Staves Acre. | ibid. |
| 33. Semen Zina, Semen Sina, Semen sa | naum, se- |
| men Zedoariæ, Semen contra vermes, S | |
| tonicum, &c. Worm-Seed. | ibid. |
| 34. Tamarindi Offic. Tamarinds. | 333 |
| OF OF ME | |
| SECT. VI. Juices. | . Herby |
| CLASS I. Juices extracted from Plants by | |
| 1. Acacia Vera Officin. | ibid. |
| 2. Hypocistis Officin. | 335 |
| 3. Glycyrrhizæ succus. Liquorish. | ibid. |
| 4. Aloes Officin. | ibid. |
| 5. Opium Officin. | 336 |
| 6. Saccharum Offic. Sugar. | 341 |
| 7. Tartarus vel Tartarum Offic. Tartar. | 342 |
| 8. Heliotropium. Turnfol. | 343 |
| 9. Indigo. | ibid. |
| 10. Alciot sive Uruha Indorum. | ibid. |
| 11. Amylum Offic. Starch. | 344 |
| 12. Terra Japonica. | ibid. |
| 13. Sago. | 345 |
| 14. Cacavi Monaid. Manihot Thevet. Caffac | da. ibid. |
| Comics Deve Con Land. Falls | N. A. |
| SECT. VI. | |
| CLASS II. Juices which flow from Veget | |
| turally. | 346 |
| Art. I. Liquid Resinous Juices slowing from | |
| of Trees. | ibid. |
| 1. Balsamum Judaicum, Syriacum, Hieruc, | buntinum, |
| Constantinopolitanum, e Mecha, &c. Ope | |
| Offic. | ibid. |
| 2. Balsamum Copaiba. Balsam of Capivi. | 348 |
| 3. Balsamum Peruvianum. Balsam of Peru | |
| 4. Balsamum Toluianum. Balsam of Toku. | ibid: |
| | 5. Liqui- |
| | |

| The CONTENTS. | xxi |
|---|------------|
| | Page |
| 5. Liquidambar Offic. | 349 |
| 6. Styrax Liquidus. Liquid Storax. | 350 |
| 7. Terebinthina Offic. Turpentine, | ibid. |
| 8. Balsamum Ipecuebæ. | 352 |
| 9. Oleum Cacao. | ibid, |
| 10. Oleum Palmeum. Palm Oil. | 353 |
| Art. II. Concreted Juices, which distil for | rom Trees, |
| whether Resins, Gums, or Gum-Resins | ibid. |
| I. Afa fætida, stercus Diaboli, Zingiov Gi | ræcor. La- |
| fer Latinor. | ibid. |
| 2. Bdellium Offic. | 354 |
| 3. Benzoinum, Asa Dulcis Offic. | ibid. |
| 4. Camphora, Caphura Officin. Camph | ire, 355 |
| 5. Caranna seu Caragna Officin. | 356 |
| 6. Copal Officin. | 357 |
| 7. Gummi Anime Officin. | ibid. |
| 8. Elemi Officin. | ibid. |
| 9. Euphorbium Officin. | ibid. |
| 10. Galbanum Officin. | 358 |
| 11. Gummi Ammoniacum. | ibid. |
| 12. Gummi Arabicum. Gum Arabick. | ibid. |
| 13. Gummi Nostras. Cherry-tree Gum. | 359 |
| 14. Gummi Guajaci. | ibid. |
| 15. Gummi Gutta, Cambogium, Gutta Gar | nbe, Gutta |
| Gamandra. Gamboge. | ibid. |
| 16. Gummi Hederæ. Ivy-tree Gum. | ibid. |
| 17. Labdanum seu Ladanum Officin. | 360 |
| 18. Manna Officin. | ibid. |
| 19. Mastiche Officin. Mastich. | 361 |
| 20. Myrrha Troglodytica Officin. Myrrhe. | ibid. |
| 21. Olibanum Officin. Thus Mas, Mann | na Thuris, |
| Olibanum Mammosum, sive Testiculosum | 362 |
| 22. Opoponax Offic. | 363 |
| 23. Sagapenum Offic. | ibid. |
| 24. Sandaracha Offic. Vernix Arabum. | ibid. |
| 25. Sanguis Draconis Offic. Dragon's Blo | ood. 364 |
| 26. Sarcocolla Offic. | ibid. |
| | 27. Scam- |

xxii The CONTENTS.

| YAII THE C O THE TOTAL | |
|--|--------|
| 27. Scammonium, seu Scammoneum Officinal. S | Scam- |
| mony. | ibid. |
| | 365 |
| 29. Tacamahaca Offic. | ibid. |
| Transcarthum Offic | 366 |
| 30; Tragacanthum Offic. | 300 |
| SECT VII France and other Even men | 110 |
| SECT. VII. Fungs and other Excresce | |
| 1. Agaricus levis sive famina, & Agaricus | mas. |
| Agarick. | 367 |
| 2. Auricula Judo, Fungus Sambucinus. Jews | s-Ear. |
| Abide I Francisco La Company Asserting S | ibid. |
| | 368 |
| 4. Lycopodii Pulvis, Sulphur vegetabile. | ibid. |
| 5. Bedeguar Offic. | ibid. |
| 6. Poco Sempie, Skinkia Offic. Agnus Scythicus ser | u Tar- |
| taricus, sive Rorometz. Muscus Aureus. | ibid. |
| 7. Galla Orientalis Offic. Galls. | 369 |
| 8. Cardui Hæmorrhoidalis Capitula. | ibid. |
| 9. Grana Kermes Offic. Coccus Infectorius, | Grana |
| Tinctoria. Kermes Berries. | 370 |
| 10. Coccinella Offic. Coccus Indicus Tinetorius. | |
| chineal, | ibid. |
| And of the State of the second state of the second | |
| PART IV. | |
| The Animal Kingdom. | |
| bidi | |
| 1. Cantharides Offic. Muscæ Hispanicæ. | 371 |
| 2. Scincus Marinus Offic. Skink. | 372 |
| 3. Vipera Offic. The Viper. | ibid. |
| 4. Castoreum Offic. Castor. | 373 |
| 5. Moschus Offic. Musk. | ibid. |
| 6. Zibethum sive Catus Moschatus. Civet. | 374 |
| 7. Vesiculæ Moschatæ Orientales. | ibid. |
| 8. Sanguis Hirci Alpini, seu Rupi-Capræ. | ibid. |
| 9. Priapus Balænæ vel Ceti. | 375 |
| 10. Cornu Cervi Offic. Harts Horn. | ibid. |
| 11. Ehur Offic. Ivory. | ibid. |
| 12. Dens Apri. Boars Tooth, | ibid. |
| 13. | Man- |

The CONTENTS. xxiii

| The CONTENTS. | XXIII |
|--|----------|
| | Page |
| 13. Mandibulæ Lucii Piscis. The Jaw Bo | nes of a |
| Pike. | 376 |
| 14. Cornu Rhinocerotis. Unicorn's Horn. | ibid. |
| 13. Os è Corde Cervi. | 377 |
| 16. Os Sepiæ. The Bones of the Scuttle-fish | ibid. |
| 17. Bezoar Orientale & Occidentale Offic. | ibid. |
| 18. Lapis Bezoar factitius, sive Lapis de Goo | |
| Stone. | 378 |
| 19. Ægagropila Offic. Pilæ Damarum. Geri | |
| zoar. | ibid. |
| 20. Hippolithos. | 379 |
| 21. Calculus Cystidis Felleæ. Gall Stones. | ibid. |
| 22. Margaritæ & Uniones Offic. Pearls. | ibid. |
| 23. Mater Perlarum Offic. Mother of Pear | |
| 24. Oculi sive Lapides Cancrorum Officinal. | Crabs |
| Eyes. | ibid. |
| 25. Chelæ Cancrorum Offic. Crabs Claws. | 381 |
| 26. Lapis Manali. The Stone of the Sea Cow | |
| 27. Dentali seu Dentalium Offic. | ibid. |
| 28. Eutali, Eutalium Offic. | ibid. |
| 29. Tubuli Marini, in quibus Vermiculi de | |
| 7 | 382 |
| 30. Umbilicus Marinus Belliricus, seu Bellicul | us Ma- |
| rinus. | ibid. |
| 31. Unguis Odoratus, seu Blatta Byzantina Off | |
| . Dioscorid. | ibid. |
| 32. Lapis Colubrinus, Pedra de Cobra de Cab | |
| sitanor. | ibid. |
| 33. Folliculi Bombycini. The Cod or Bags | |
| worms. | 383 |
| 34. Folliculi Aranearum. The Cod or Bags | |
| ders. | ibid. |
| 35. Ichthyocolla Offic. Ifing-glafs. | ibid. |
| 36. Gluten Taminum. Glue. | 384 |
| 37. Nidi Alcyonum seu Hirundinum. Nests o | |
| | ibid. |
| | 8. Cera |

xxiv The CONTENTS.

| | | Page |
|-----|-------------------------------|-------|
| 28. | Cera flava & alba Offic. Wax. | 384 |
| 29. | Gummi Lacca Officin. | 385 |
| 40. | Mumia vera Officin. Mummy. | ibid. |
| 41. | Ungula Alcis. Elks Hoof. | 386 |
| 42. | Sperma Ceti Offic. | ibid. |





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INTRODUCTION.

CHAP. Ho months

Definition and Division of Medicines.



HE Means used to preserve Health and cure Diseases are of three Kinds; Diet, or a proper Regulation of our Way of living; Surgery, or the Use of the Hand, either alone, or assisted by Instruments; and

Pharmacy, which includes the Medicines employ'd for the various Difeases, to which the human Body is subject. As the Knowledge of these three general Branches of the Therapeutick Part of Physick is necessary to all Physicians; so that of Medicines in particular is very difficult to be acquir'd, both on account of their vast Extent, and of the Pains and Labour requisite to discover their Virtues.

By Medicines is meant whatever corrects a depraved or vitiated Condition of the Body, and B restores restores it to a healthful State; so that they differ both from Aliment, which preserves the Body in a sound State, whereas Medicines restore it when impaired; and from Poisons, which tend to destroy the Body. All the Parts of Diet may indeed be termed Alimentary Medicines, inasmuch as they may serve to confirm Health on the first Approaches of a Disease; as Poisons, which are always detrimental to the Body, have been term'd Deleterious Medicines.

Medicines are either Simple of Compound: Simple Medicines are those which are form'd spontaneously, or by the Assistance of Nature alone; and those are called Compound, which are owing to the Art and Industry of Men, and to the Mixture of various Simples put together. We propose here to treat only of Simple Medicines; the entire Collection of which is termed the Materia

Medica.

The principal Differences of Simples, whether foreign or domestick, are taken either from their Form and Texture, or from their Virtues. In respect of their Texture they are divided into Minerals, Vegetables, and Animals; each of which has been termed a Class, Kingdom, Family, &c.

The Virtue of every Medicine consists, in general, in changing the State of the Solids or Fluids of the Body. The Fluids are either thrown out of the Body or chang'd in it. Evacuating Medicines act by Stool, Vonit, Urine, insensible Perspiration, Sweat, the Menses, &c. and from thence are term'd Purgatives, Emeticks, Diureticks, Sudorificks, Diaphoreticks, Emmenagogues, &c. Again some of them have been supposed to evacuate only particular Humours; and hence has arose the Distinction of Purgative Medicines into Cholagoga, Melanogoga, Phlegmagoga, &c. Alterative Medicines perform their Effects by allaying

laying the Heat and Motion of the Fluids, by attenuating them when too gross or viscid, by encreasing their Motion when sluggish and languid, &c. and have accordingly been denominated refrigerating, heating, attenuating, &c. Their Virtues have been likewise apply'd either to particular Distempers, or to all the Distempers of some particular Part, and on these Accounts they have been distinguished into Febrifuge, Antipleuritick, Antidysenterick, Traumatick, &r. Cephalick, Ophthalmick, Pectoral, Cordial, Stomachick, He-

patick, Hysterick, &c.

Medicines which act on the Solids are fubdivided into Emollients which relax the Fibres; Stypticks which contract, Cathæreticks which corrode, &c. These Differences of Simples, in respect of their Virtues, might be carry'd to an infinite Length, but as those which are founded on their Form and Texture are much more natural and fimple, we shall here examine them in that Order, and accordingly divide this Treatife into three Parts; the first concerning Fossile Medicines, or those found in the Bowels of the Earth, fuch as Mineral Waters, Earths, Stones, Salts, Sulphurs, Bitumens, metallick Concretions, and perfect Metals. The fecond concerning Vegetable Productions, as Roots, Barks, Woods, Leaves, Buds, Flowers, Fruits, Seeds, liquid and concreted Juices, and all other Things belonging to Plants. The third concerning Animals, as Infects, Fishes, Birds, Men, and the Parts and Excrements of each Kind, fo far as they are used in Physick.

To treat of each of these with that Accuracy which the Dignity of the Subject requires, it is not sufficient barely to relate the History and Virtues of each Simple, as handed down to us by Authors; but many other Particulars also must

be attentively confider'd.

of Fossil, Vegetable, and

In what the Ancients, for Instance, have left us concerning the Materia Medica, there is the utmost Confusion and Obscurity; the same Medicines are often called by different Names; some are barely mentioned without any Description; and the Virtues ascribed by them to one Simple have been by later Writers attributed to others. To clear up and determine all these Uncertainties at this Time of Day, would be a Task as difficult as it is useful. In the next Place, so great and fo numerous Virtues are ascribed to particular Simples by Authors, that if they could be depended on, each ought to be reckon'd almost an universal Remedy; but as many of these Virtues are merely imaginary, it requires the greatest Caution to diffinguish the fictitious from fuch as truely belong to them. Again, tho' the Knowledge of the Materia Medica be now carry'd a very great Length, there are nevertheless many Things still remaining to be discover'd about it, in order to enrich this Science with new specifick Remedies, to determine the Manner in which those Medicines act whose Effects are already known, and to fix upon a more fafe Method of administring them. order to this, I propose, first, to give both the ancient and modern Names of each Medicine; next, to add the Description, History, and Choice of them; then, to fet down their chymical Analysis, and an Account of the Parts into which they are resolvible, whereupon their Virtues seem chiefly to depend; and afterwards to explain those Virtues, as they have been either discover'd by long Experience, deliver'd by Authors of Credit, or found out by myfelf. I shall likewise sometimes enquire into the Manner and Reason of their Action, that I may not appear fo far to imitate the Example of Empyricks, as blindly to follow Experience, without any Regard to Reason and Philosophy. Philosophy. Lastly, I shall carefully enumerate the several Cautions to be used in giving them, the Preparations they require, and in what Cases they may be hurtful. But before I begin, something must be premised concerning the Principles of Bodies, and the Methods of discovering the Virtues of Medicines.

CHAP. II.

The Principles of Bodies in general.

T is impossible to discover the Virtues of any Body, or how mix'd Bodies of different Kinds stand related to the human Body, either for the Prefervation of its Functions entire, the refloring them when lost or impaired, or for the total Destruction thereof, 'till we know the Principles of which they confift, and likewise the Mixture and Proportion of fuch Principles in Bodies, to which their Effects are chiefly owing. Wherefore, having discovered by various Ways the Parts into which a true Chymical Analysis refolves Bodies, we must look upon such simple Parts, into which all Mixts are refolvible, and of which they feem to be compounded, as their true and genuine Principles. The Ancients having observed that in analysing all Bodies whatever, they obtain'd a Spirit or Mercury, Sulphur, Salt, Water, and Earth, concluded the Number of Principles to be five.

If Wine, for Instance, be distilled in a proper Alembick, a burning Water or Spirit will first arise, next an insipid Water, which they call Phlegm, a thick viscid Mass alone remaining in

the Still. This they put into another Veffel, or Retort, which being exposed to a more intense Heat, a small Portion of Phlegm comes over first, then an acid Water, which according to them is still Spirit or Mercury, next a fat oily Substance called Sulphur. What remains still in the Retort is burnt to Ashes in an open Fire. These Ashes are thrown into an Earthen Vessel, with a proper Quantity of boiling Water, which they impregnate with Salt. This Water being filtred thro? Cap-Paper, and afterwards evaporated, leaves the Salt at the Bottom. The other Part of the Ashes, which the Water does not take up, is term'd

Earth, or Caput Mortuum.

Of these five Substances the Chymists have reckon'd two to be passive, Water and Earth; and three active, Spirit, Sulphur, and Salt; and on these last they thought the whole Virtue and Efficacy of the mix'd Body depended. In this Analysis we may observe, that there is a two-fold Spirit; one oily and inflammable, which rifes first by a gentle Heat, and is termed Spirit of Wine; another acid and penetrating, like that of Vinegar. Befides these Chymists give the Name of Spirit to other penetrating, volatile, or urinous Liquors, obtain'd from the Parts of Animals, fuch as the Spirit of Urine, Harts-Horn, Blood, and fuch like Substances. But the later Chymists have banished these Spirits from the Number of their Principles, as being nothing else than Sulphur, or Salt, diffolved in Water. Thus Spirit of Nitre, and others of that Kind, are only acid Salts in Water; Spirit of Harts-Horn, or Urine, Alkaline Salts; and Spirit of Wine, or of Turpentine, an æthereal attenuated Oil.

Some of the Moderns deny likewife, that either Sulphur or Salt deserve the Name of Principles or Elements, as not being the most simple Substances

producible

producible by Chymistry. For Sulphur, when treated with due Care, may be refolv'd into Salt, Water, and Earth; as is evident by diftilling fetid distill'd Oils several Times with quick Lime; which by this Treatment yield, in large Quantities, a volatile Salt diffolv'd in Phlegm, together with a Caput Mortuum, or Earth. Likewise æthereal Oils are only fat, thick Oils, like that of Olives, attenuated by Salts and diffolv'd in Water, as may be prov'd by these two Experiments. If Oil of Olives, or any other of that Kind, be mixed with a fermenting Liquor, fuch as a Solution of Honey in Water, the whole will be converted into an inflammable Spirit. And if a Quart of Spirit of Wine, diluted with fix Quarts of common Water, be expos'd in a cold Place to the open Air, the volatile Salts will fly off, and leave Drops of Oil swimming at the Top, which are in every respect the same with Oil of Olives, or Almonds.

Salt has no better Title to a Principle than Sulphur, because it may, by proper Management, be at length reduced to Earth and Water. Thus Nitre by Distillation may be almost wholly reduced to an acid Spirit, but if it be burnt with Tartar or Charcoal Duft, it becomes an Alkaline Salt, call'd This, if suffer'd to run per deliqui-Fix'd Nitre. um, and afterwards filtred through Cap-Paper, will leave a large Quantity of Earth behind; and if the same Liquor be distill'd to Dryness, a large Quantity of infipid Water will come over, and the Salt remaining at the Bottom of the Retort will have loft a great Part of its first Quantity. If this Operation be repeated, nothing will at length remain but Earth. Again, the Vitrification of Alcaline Salts feems to be nothing but the Converfion thereof into Earth, for Glass has no Qualities different from those of Earth.

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What we have proved by Experiments made by refolving Bodies, may be further confirm'd by others relating to the Formation and Composition of 'em, and particularly by Van Helmont's famous Experiment on the Willow, which has been often quoted by fucceeding Authors. He took about two hundred Pounds of Earth dried in an Oven, and put it into a Veffel, cover'd with an Iron Lid full of Holes. In this Earth he fet a Branch of Willow, weighing about five Pounds, which foon took Root, and grew fo much, that in eight Years Time it weighed an hundred and fixty Pounds, the Earth it stood in having, during all this Time, loft only a few Ounces, fo that the whole Increase of the Tree must have been owing to Rain Water and a very small Proportion of Earth, and the Salts and Sulphur therein must have been compos'd of these two Elements alone. The Experiments of this Kind made by the illustrious Mr. Boyle on fmall Sprigs of Mint, Marjoram, Pennyroyal, Balm, &c. set in Phials fill'd with clear Water, are more to be depended on. They increas'd in a fhort Time to double their first Weight, and being afterwards diffill'd, they yielded the very same Principles, as they would have done, had they grown in the most proper Soil; from whence it is plain, that Salt and Oil owe their Original to Water and Earth.

Water and Earth do, in the strictest Sense, deferve the Name of Principles, but in the Formation of mix'd Bodies, a third Principle must necessarily concur with them; for as they are of themselves wholly unactive, something must be supposed to give them their Motion and Activity. Without this, Water would immediately turn to Ice, and as there are sew Bodies, out of which Fire may not be drawn, it is evident that there must be some active moveable Principle in them all,

all, to which the Motion of the other Parts is owing. Therefore, though this Principle should not fall under our Senses in the same Manner as the others do, that can be no Reason for doubting of its Existence, since it must concur in the Composition of all Bodies, which, if they were made of Water and Earth alone, would remain for ever without any Virtue or Energy. This they must receive from another Principle, and according to the different Combinations of all the three, Bodies are formed with different Properties and Powers. We acknowledge therefore three fimple Substances in Bodies, which are properly Elements or Principles. One active, which may be term'd Fire, and two passive, Water and Earth. From the most simple Union or Connexion of these three Salt arises, which consequently is to be look'd upon as the most simple of all mix'd Bodies. The next to that is Sulphur, or Oil, made by the Union of the three Principles and of Salt.

Thus far concerning the Principles of Bodies in general; we now go on to confider each of them in particular.

CHAP. III.

The Principles of Bodies in particular.

ART. I. Fire.

WE reckon Elementary Fire the first Principle of Bodies, as being that from whence all the rest receive their Activity. It is a simple and most subtle Body in a continual swift Motion, filling

filling and eafily permeating the Pores of all other Bodies. Its immense Subtlety is evident from this, that it penetrates all Bodies what soever; and its swift Motion, from that Rapidity, which it is capable of communicating to them. Its Force is in proportion to the Quantity of it any where collected. In the Sun, which may be look'd upon as a vast Congeries of this Substance, its Motion is most violent. In Culinary Fires the Quantity and Motion of it are not so great, but still greater than in spirituous and volatile Liquors, where it is hardly to be perceived, except when they are fet on fire. Not only all Motion, but also Heat, is owing to it, which as it exists in Bodies is nothing but the excessive Motion of their Parts. It is too fubtle and active ever to be collected pure in chymical Analyses; where-ever it is found, it is always united with Water and Earth in Salts and Sulphurs; and is fometimes concenter'd in Bodies in fo great Quantities, as confiderably to increase their Weight, as is evident in calcin'd Antimony, in which there is an Addition made of almost a fifth Part.

ART. II. Water.

ELementary Water is a fimple, liquid, infipid, inodorous, pellucid Substance. Its Fluidity is owing entirely to the Action of Fire, and when that Action is very great, its Parts are actually divided, and the whole turned to Vapour, but when it is very small, they cohere strongly, and turn to Ice. This Element the Chymists call Phlegm, and it may be conceived to consist of small smooth Particles of an oblong or oval Figure, and perfectly rigid or inflexible. From the Minuteness of its Particles it easily penetrates the Pores of almost all Bodies. An oval Figure seems

feems more agreeable to the Fluidity and Motion of Water than a spherical, and likewise to the Solidity we observe in Ice; the Points of Contact being too few in spherical Bodies to form fo strong a Cohesion. Were its Particles angular and flexible, they would be too weak to penetrate and diffolve Salts, and would likewife be too much refifted; but as their Surface is fmooth, they can eafily enter the Pores of Salts, and afterwards as eafily separate their Parts, that is, diffolve them, by their Rigidity and oval Figure. The want of Taste or Smell in Water seems to be owing to the Smoothness, Obtuseness, and Smallness of its Particles, which cannot vellicate the Nerves of the Tongue or Nostrils. The Fluidity of Water arises from the Smallness, Smoothness, and Figure of its Particles, and from the eafy Motion thereof by the Fire contained in their Interstices. Without the Action of Fire separating these Particles and keeping them in continual Motion, their Fluidity would prefently be loft, how much foever their Structure may dispose them to it, and they would become one folid Mass. On the other Hand, if the Action of Fire upon them be very great, they are further separated from one another, and fly off in Vapour or Smoak. In fine, Water is transparent, because its Pores are so disposed as readily to transmit the Rays of Light.

ART. III. Earth.

Lementary Earth is the fame with the Terral Damnata or Caput Mortuum of the Chymists; being a simple, friable, porous Substance, without Smell or Taste, consisting of Particles of no regular Figure, and altogether unsit for Motion. The Porosity of Earth seems to arise from the irregular Figure of its Particles; and as these Particles often-

of Fossil, Vegetable, and

whole Mass must necessarily be friable. The Want of Taste and Smell may be owing to their

Inaptitude for Motion.

In the Analyses of Bodies the last thing is always this Principle of Earth; and in their Composition it seems to serve as a Basis or Foundation for the other Parts of the Mixture; and to it the Dryness, Solidity, and Hardness of Bodies is in a great Measure to be ascribed.

ART. IV. Salt.

CALT, as has been faid, is a mix'd Body, but I chuse to say something of it in this Place immediately after the three Principles, because in all the common Analyses of Bodies it is obtain'd entire, and a great deal of Pains and Accuracy is requir'd to decompose it, or reduce it to its Principles. It is also the sole Origin of the Taste, Smell, and many other Properties of Bodies. It may be defined to be a mix'd Body, form'd by the Concretion of Fire, Water, and Earth, into a folid rigid Substance, foluble in Water, and fusible by Fire. As its Particles may be conceived to cohere by large Surfaces only, Salt cannot be friable like Earth, but requires a confiderable Force to separate its Parts, which fly off from one. another, like those of Glass, with a sensible Noise. It becomes the Cause of Taste and Smell. because its Particles terminate in strong Points, which vellicate the nervous Membranes of the Tongue and Nofe.

Salt is of three Kinds, acid, acrid or alcaline, and a third compounded of the other two, called

in Latin Sal salsus.

Acid Salt is a Congeries of inflexible folid Parts of an oblong Figure, and pointed at both Ends. Ends. That its Particles are rigid and hard appears from the Force, with which it divides and diffolves folid Bodies; and their Sharpness and Pungency are evident from the Effect they have on the Tongue, different from the Corrosion of acrid Salts. Acid Salt is easily disfolv'd by Water, and after this Solution its Particles are equally dispersed through that Fluid, and have the same Motion with it. Hence it appears, that the Particles of both Substances have nearly the same specifick Gravity; and likewise, that the Motion of the aqueous Parts is great enough to overcome the Cohesion of the Parts of Salt.

Concerning the Manner, in which the Particles of acid Salt are compounded of Fire, Water, and Earth, nothing can with Certainty be determin'd. It may be conjectur'd, however, that feveral Particles of Water being collected into one little Mass, are cemented together by some Particles of Fire and Earth, lodg'd in the Interstices lest between them; and that all these taken together are disposed in an oval Form, or that of two Cones join'd by their Bases. This Configuration, however, is not the same in all acid Salts; but the Differences may all be reduced to three; the nitrous Acid, the muriatick, and the vitriolick; of all which more hereafter.

The Word Alkali is derived from Kali, the Arabick Name of a Plant, from the Ashes of which a Salt is obtain'd proper for making Glass; and from thence it came to be used for all Salts got from the Ashes of Plants, and afterwards for all Salts and other Substances whatever, that ferment with Acids.

Acrid or alkaline Salt seems to be a Congeries of spherical Particles, with rough prickly Surfaces, because of their great Disposition to Motion, and their corrosive burning Taste, the Points of

their

14 Of Fossil, Vegetable, and

their Surfaces acting on the nervous Papillæ of the Tongue, like fo many Files, whereas acid Salt is only pungent. But then by these Points a larger Surface is exposed to the Action of Fire than could otherwise be, and thus the Particles of Alkaline Salt are very volatile, or eafily raifed by a gentle Heat. The Origin of this Salt is probably from a certain Connexion of acid Points and terrestrial Particles, because in many Operations of Chymistry such Salts arise from the Mixture of acid Salts and Earth; as we fee particularly in the Preparation of fix'd Nitre, and Fermentation of Urine. Nitre being distill'd leaves a compound fix'd Salt behind, of the same Nature with Sea Salt, out of which, by a nicer Distillation, an acid Liquor may be extracted, without any volatile Salt, or at least but a very small Quantity; but if the fame fix'd Salt be previously fermented, and then diffilled, it yields a large Quantity of volatile Salt, and very little fix'd Salt or acid; because by Fermentation or Calcination, the acid and terrestrial Particles are intimately mix'd, the acid Spicula entering the Pores of the Earth, and fo forming new Moleculæ, which are denfe and close towards the Centre, and prickly on the Surface by the acid Points flicking out. Such are the Particles of volatile Alkali's, of which, if a great Number be join'd together, they must cohere very strongly by Means of their Points, and form Moleculæ of irregular Figures, in the Pores of which watery, earthy, fulphureous, or acid Particles may be receiv'd and abforb'd. Hence it is, that acid Salts are feldom pure; and as they are very often fill'd with Particles of Earth, they refift the most violent Degree of Fire, and will fooner melt than be rais'd by it. This is the true Nature of fix'd Alkaline Salt, fuch as Salt of Tartar, or the Salts got from the Ashes of Plants, call'd

call'd Lixivial Salts. If they be impregnated with fulphureous Particles, they continue very volatile, and are raised by a small Degree of Fire, as we see in Salt of Urine, Harts-horn, and others got from Animals. Acrid Salts easily melt when exposed to a moist Air, because the Particles of Water contained therein readily enter their Pores. When thus melted, they become properly Lixivia, and are commonly termed Oils, as Ol. Tartari per deliquium. Volatile alkaline Salts diluted with Water, are called volatile urinous Spirits; such as the volatile Spirit of Urine, of Harts-

horn, Blood, and others.

The Sal Salfus, or third Kind, is compounded of acid and alkaline Moleculæ united together; and the Figure of its Particles is chiefly owing to the Kind of Acid that enters its Composition. The Impression these Particles make on the Tongue is more dull and languid than that made by acid or acrid Parts alone, because the Moleculæ form'd by the Union of these are larger in Bulk, and confequently lefs disposed for Motion; and therefore, tho' there is a greater Quantity of Aculei, or Points, in one of these Moleculæ than in the former, yet their Bulk makes them less capable of entering the Pores of the Skin, and vellicating the nervous Papilla, than when they are in a disjoin'd State. The Taste of these Salts is term'd saline, and varies according to the Difference of the acid or alkaline Particles which compose them, according to the Thickness of the Spicula, their Number, and the other Parts that may be mix'd with them. That this is the true Original of this Kind of Salts is evident, both from the artificial Composition thereof, from acid and acrid Particles blended together, and from the Refolution of them into the fame. Thus by pouring Spirit of Nitre, of Sea Salt, or of Vitriol, on Salt of Tartar, new Salts

16 Of Fossil, Vegetable, and

are produced exactly of the same Appearance with Nitre, Sea Salt, and Vitriol; and by analysing these three Salts, the essential Salts of Plants, Sal Ammoniacum, and others, an acid and alkaline Salt may be obtained, in some fix'd, in others volatile.

ART. V. Oil or Sulphur.

WHAT the Chymists call Oil or Sulphur is not a fimple Substance, but a Body compounded of Fire, Water, Earth, and Salt; but we chuse to say something of it here, as it is most commonly separated entire in the Operations of Chymistry, and is with some Difficulty resolvible into its component Principles. It may be defined to be a fluid, viscid, inflammable, transparent Body, without Taffe or Smell, (though by mixing it differently with Salts, these sensible Qualities are produced) compounded of Fire, Water, Earth, and Salt; and it may be conceived to confift of many Flakes, or Flocculi, each of which is again made up of very small flexible Filaments, form'd of the four Principles beforementioned, by Fermentation, as well in the Bowels of the Earth, as in the Bodies of Vegetables and Animals; thus an aromatick Plant growing in Water, will, by Distillation, yield an Oil, which could never have been obtained from the Water in which it flood; and all Oils may by Art be refolv'd into Water, Earth, and Salt. From these Filaments variously concreted arise the Flakes already mentioned, which are of different Thickneffes, and in the Pores thereof is lodged the Element of Fire, which also runs in Rivulets thro' their Interstices. Upon these depend the specifick Levity, Inflammability, and Fluidity of Oil; but as, notwithstanding the intestine Motion caused

caused by the Element of Fire, the Flocculi still adhere, in some measure, together, this Fluid

must be more viscid than any other.

From what has been faid concerning the Nature of alkaline Salts, and the Figure and Structure of the oily Flocculi, it is easy to conceive why all Alkali's diffolve Sulphurs; for fince the alkaline Particles are spherical and prickly, they cannot enter the Interstices of the Flocculi without carrying away some of them from the rest, and thus by Degrees throughly diffolving them. But the dense, rigid, and pointed Moleculæ of Acids, being forced into these Interstices, increase the Denfity and strengthen the Texture of the Flocculi; and from the Diversity of these and of the acid Spicula mix'd with them arise the different Kinds of Sulphurs. Sulphurs form'd in the Earth of Fire, acid Salt, Water, and a very fine Earth are term'd Bitumens. Thus Bitumens diffolyed in a large Quantity of Water form the mineral Oils or Petrolea. But if they are mix'd with Earth and Salt, the folid Bitumens are produced, differing from one another in Degrees of Purity, according to the Quantity or Groffness of the Earth, or different Degrees of Mixture. Thus foffil Coals, Jet, Amber, and the common Bitumens, and bituminous Earths are produced. If there be but a small Quantity of Earth and much acid Salt, the common mineral Sulphur, or Brimstone, is form'd. If the mineral original Bitumen is join'd to a fufible Earth, capable of Vitrification, it communicates to it a metallick Form, that is, the Sound, Brightness, Softness, Ductility, Malleability, and all the other fenfible Qualities of Metals.

This Origin of mineral Bitumens may be confirmed by many Experiments. If a Mixture of equal Parts of Oil of Vitriol and Oil of Turpen-

tine be digested together for a considerable Time in a very gentle Heat, and afterwards diftill'd in a Retort, there will come over first a yellowish Liquor refembling Petroleum, both in Smell and Consistence. What remains in the Retort is at first a foft Bitumen, and afterward turns into a hard black Mass, easily inflammable, and, when burnt, fmelling exactly like foffil Coal. But if the Diftillation be continued, a white acid Liquor will next be obtain'd, which, by standing, lets fall a grey Powder, which is true common Brimstone, a yellow Substance of the like Nature adhering likewife to the Neck of the Retort; what is left behind being a black, shining, light Substance, difposed in thin disgregated Strata, like Talc, in which, by the Help of the Loadstone, Iron may be discover'd. Thus therefore all these Bitumens may be artificially produced; and the Analysis of the natural ones further confirm the Manner of their Formation. Thus the Chymists have shewn, that Metals are nothing but bituminous Substances, which have undergone a long Digestion; for by depriving them of their Sulphur they are reduced to Ashes, and then to Glass. This is easily seen in the imperfect Metals. For if any of them be exposed to a long Heat, and especially to the Rays of the Sun, collected by a large Burning-Glass, the fulphureous Principle flies off, and only a Calx, or Ashes, will be left behind, which, in a more vehement Degree of Fire, are presently vitrify'd; and by restoring the Sulphur this Glass may again be reduced to Metal.

The inflammable Substances in Animals and Vegetables consist of a different Combination of the Principle of Sulphur and acid Salt; for the Oil, or Sulphur, in these is form'd by a small Portion of Earth join'd to the elementary Fire, acid Salt and Water; this Oil, when join'd to an acrid Salt, produces

produces Gums; when join'd to a fine Acid; and a new Accession of fiery Particles, it produces effential. Oils and inflammable Spirits; but if the Acids are more gross, by Reason of a larger Quantity of Earth join'd to them, it forms Refins, as we learn from the artificial Composition of all these Substances. By mixing Spirit of Wine with volatile Spirit of Urine, we obtain a mucilaginous Concretion, or thin Gum. Oil of Olives and Salt of Tartar, melted together, make a kind of Soap, or thick Gum; and if Spirit of Wine be digested for a long Time with Oil of Vitriol, and then distill'd, an inflammable Oil is obtain'd, resembling, in Smell and other Qualities, the effential Oils of Plants, a true Resin being left behind in the Retort.

In Animals this fame oleaginous Principle forms the Fat, and other glutinous or gelatinous Subfiances; these last being compos'd of an acrid volatile Salt and Oil, as appears from their Analysis; but Fat is made of the same Oil and acid Salt; for if Oil of Olives and Spirit of Nitre be mix'd together and digested, a Substance will be form'd in every thing resembling the Fat of Ani-

mals.

Sulphureous Substances found in Bodies are either fix'd or volatile. The fix'd Sulphurs are either folid, such as Fat, Resin, and the Bitumens; or sluid, as Oils. Volatile Sulphurs are such as fly off with a small Degree of Fire, and have an Appearance compounded of that of Oil and Water. Such are inflammable Spirits obtain'd from the Flowers and Fruits of Plants.

CHAP. IV.

The Mixture of Elements.

A LL Bodies confift of the five Principles mentioned in the last Chapter; and the Diversity of Bodies arises entirely from the different Combination thereof. These Combinations, or the Mixture of the five Principles, are owing to Motion, and that Motion entirely to the Element of Fire. This Motion is sometimes slow and insensible, as in the Growth and Maturation of Fruits; more lively and quick, as in the Fermentation of Must; or very vehement, as in the Destagration of Bodies. All these Motions go by the general Name of Fermentation, and if they tend to the Destruction or Dissolution of Bodies they are term'd Corruption.

The most simple or least compounded Mixture of Principles is seen in the Formation of Salts, which consist chiefly of Water and Earth; next, of Sulphur, made up of Water, Earth, and Salt; then of the acrid Salts, both fix'd and volatile, with the essential Salts of Plants, and sulphureous Bodies, whether solid or liquid. The Manner how these Mixtures are brought about, and the Changes arising from thence, will best be understood by

Examples.

The Fruit of the Vine, just beginning to put on the Form of Grapes, is insipid, or at least tastes only like Grass. As it grows, a certain Acidity is discover'd in it, which at first produces an austere Taste, then an acerb one, in which State the Juice is term'd Omphacium, which, in Distillation, yields a great Quantity of Water, some acid Liquor, and a small Portion of Oil, a large

large Proportion of Earth being left behind. In this Juice therefore the austere and acerb Tastes are owing to the acid Spicula, just breaking out through the earthy Parts, but not wholly difengaged from them. When the Grapes come to be fully ripe, the austere Taste is changed to a sweet one, because the Juice, being more thoroughly penetrated by the Element of Fire, is rarify'd, and put in a more violent Motion, by which the Salts throw off their earthy Involucra altogether, and by a new Combination of these Salts, Water, and Earth, are form'd Sulphurs, or Oils, But if any of the acid Salts remain after the Composition of the Sulphurs, they continue still entangled by the Filaments thereof, and their sharp Points vellicating the nervous Papillæ of the Tongue, create that agreeable Taste which is perceiv'd in Must. This Must in Distillation affords a great Quantity of Phlegm, next a pretty large Portion of an acid Water, some acrid or volatile urinous Salt, and a Quantity of thick Oil, much beyond what was gain'd by the former Distillation. Lastly, from the Mass that remains in the Retort, an acrid fix'd Salt may be obtain'd by the common Method. However, even in this Juice of ripe Grapes, or Must, the Salts and Oils are not carried to the greatest Degree of Fineness, and Part of them remain still involv'd in the earthy Involucra. But if a large Quantity of it be fet to ferment, the igneous Particles begin to act again, and by them this intestine Commotion is continued, 'till all the gross Parts are either attenuated or thrown out from the Liquor, and the Salts and Sulphurs perfectly fet free from the earthy Parts, and intimately mix'd with one another. The Liquor in this State is Wine, and the gross Parts that fall to the Bottom of the Vessel are term'd Lees. The Briskness and penetrating Quality of C 3 the

the Wine feems to be owing to the large Proportion of the Element of Fire, which harbours among the Filaments of the fulphureous Flocculi; and if this Liquor be distill'd, we obtain, first, a great Quantity of inflammable Spirit, then a copious Phlegm, next an acid Liquor with fome Portion of an oily Spirit, a thick Oil, and laftly, a small Quantity of Caput Mortuum, which will yield a little fix'd Salt. In this Distillation a far less Quantity of acid Liquor is obtain'd than from Muft, which, on the other Hand, yields no inflammable Spirit. If the Lees of Wine be well dry'd, and then distill'd, they yield a very large Quantity of volatile urinous Salt, the acid Salts combined with the fulphureous and earthy Particles being, by Fermentation and Heat, converted into alkaline Salts.

In the same Manner, if green Pease or Beans be distill'd, they yield a great deal of acid Liquor and Phlegm, with a small Proportion of Qil. If they are first fermented with common Water, an inslammable Spirit is got from them in the same Manner as from Wine; and if they are kept for some Months in a dry Place, they yield a volatile alkaline Spirit, without any acid Liquor, or at least but very little. From whence it is evident, that acid Salt, by its Union with other Principles, is changed into Sulphur, and by its Union with earthy and sulphureous Particles becomes an alkaline volatile Salt; as by being driven into earthy Particles alone, by the Force of Fire in Calcination, it is chang'd into a fix'd Alkali.

It may be proper upon this Occasion to observe, that the Salts of all Plants are not entirely alike, but differ from one another, not only as the Quantity of Sulphur, Water, or Earth, which is join'd to the Acid, is greater or less, but also according to the original Nature of the Acid, which enters their

their Composition. Acid Salts, as we have already faid, are of three Kinds, muriatick, nitrous, and vitriolick. Muriatick Salts, fuch as Sea-Salt and Sal Gemmæ, being crystalliz'd, put on a cubick Figure, the Particles thereof appearing to be form'd of two quadrilateral Pyramids, join'd together by their Bases. Nitrous Crystals represent Prisms with six Sides, form'd by the Juxta-position of two triangular Pyramids. And Crystals of Vitriol feem to confift of two hexagonal Pyramids, as far as can be judged by the Particles thereof, when carefully feparated from all Metals. Thefe original Salts, combined with others, form Compound Salts of almost all Kinds. Thus in the vegetable Kingdom, the different Sorts of Vinegars are nothing but fome original acid Salt diffolv'd in Phlegm. The effential Salts of Plants, obtain'd without Fire, confift of fome Acid join'd with Particles of Earth, or of the other Principles. Sal Ammoniac arises from the Union of acid and volatile alkaline Salts. Fix'd Alkali's are only the acid Spicula stuck into earthy Molecula, and volatile Alkali's confift of the fame Acid, join'd to very fine Particles of Earth and Sulphur, fo as to form prickly Globules. Moreover, the fame Varieties of acid Salts are to be met with in Vegetables, that are found in Minerals. Thus the effential Salts of Pellitory of the Wall, Borage, wild Cucumber, &c. are nitrous, and when thrown upon burning Charcoal they fulminate like Nitre. The fix'd Salts of Carduus Benedictus, Glass-wort, and Spunge, are like Sea-Salt, their Particles having the fame cubick Figure, and when thrown upon burning Charcoal they decrepitate. The Crystals of Tartar are like those of Vitriol; and that they are form'd by a vitriolick Acid appears from the fulphureous Smell of Tartar, when artfully calcin'd. Befides

24 Of Fosfil, Vegetable, and

Besides the faline Compounds already mentioned, other Mixtures are form'd in Plants, fuch as Gums, Refins, Honeys, &c. Gums are something between Acid and Oil, being an acid Salt fo fix'd in Earth as that the greatest Part of it is changed to an Alkali, the other into Oil, fo that the Mixture arifing from thence is an oily Salt. refembling the saponaceous Concretes of the Chymists, made of Oil of Olives and a Lixivium of Tartar, or the mucilaginous Bodies form'd of Spirit of Wine and the volatile Spirit of Urine. And thus we fee, that all Seeds, which are oily when ripe, are in the Beginning only a Mucilage, or imperfect Oil. Refins confift of Oil and Acid, and accordingly are artificially produced by mixing Spirit of Vitriol with Spirit of Wine, or of Turpentine. They are either folid or liquid, but these differ from one another only in the Proportion of Earth, that enters their Composition, Melleous Juices, which either exude spontaneously from Plants, fuch as Manna, or are obtain'd by Art, as Sugar, are effential Salts, confifting of a Mixture of Acid and Alkali, with a large Proportion of Oil.

The Mineral Kingdom furnishes us with a great Variety of Instances of the Way how the Principles of Bodies may be combined together. The Lime-stone and Parget are so framed, that by being calcined, a vast Number of Cells are open'd by the Fire, into which Water easily enters, with a Hissing or Collision of the included igneous Particles. If the Water remain long in these little Receptacles, nitrous Parts are form'd, as we see in old Walls built with these Materials, from which Nitre may always be obtained. The greatest Part of this Nitre, by Distillation, is changed into an acid Spirit, but by Calcination turns to an alkaline Salt. And it may be, that the Nitre

of the Ancients, or that alkaline mineral Salt, which was dug out of the Earth in Ægypt and other Countries, and is obtainable by Art from mineral Waters, was nothing but Nitre calcin'd by the Heat of the Earth, and so converted into a fix'd alkaline Salt. The vitriolick Acid join'd with different metallick Substances produces all the Kinds of Vitriol; with an astringent Earth it forms Alums; and with the Principle of Fire, common Brimstone, which, by Deslagration, may be again converted into Oil of Vitriol, the other Principle slying off. Brimstone may likewise be artificially produced by uniting the Principle of

Fire to any vitriolick Acid.

The like Mixture of the Principles of Bodies may be observed in the Animal Kingdom. Chyle and Milk contain a latent Acid; which eafily difcovers itself by Putrefaction; but this acid Salt having undergone a due Fermentation, or fome other Action analogous to that in the animal Body, is changed into a volatile Alkali, obtainable in great Plenty from Blood, Serum, Bile, Urine, &c. In a healthful Body, however, these volatile Alkali's are never perfectly form'd, the animal Salts being more of the Nature of Sal Ammoniac, with a Mixture of earthy and oily Parts, to which Mixture the glutinous Quality of the Blood and Serum is owing. By Putrefaction or Calcination all Animal Liquors are changed, fo as to afford perfect volatile Alkali's, as has been evidently shewn by Experiment.

CHAP. V.

The Manner of Discovering the Virtues of Medicines.

TOTHING is more to be wish'd for than that Physicians could discover the Changes which all natural mix'd Substances are capable of producing in the human Body. This, with a fufficient Share of Discernment how to apply these known Remedies properly, would carry the Practice of Phyfick to as great a Heighth as can be defired. But as Observations of this Nature of the Effects of Bodies on one another are still very lame and imperfect, different Methods have been thought of, in some measure, to supply the Want thereof. Some have thought it worth while to frame from the Figure, Colour, or other external Qualities of natural Substances, certain Connexions between their Virtues and fome particular Parts or Diseases of the human Body; and on these Principles have form'd Systems of the Medicines proper for the Diffempers incident to each Part. Thus they have pretended, that there is a certain Analogy between Nutmeg and the Head, between the Leaves of Afarabacca and the Kidnies, between the Fruit of Anacardium and the Heart, between Leadwort and the Teeth, between the Seeds of the Ash Tree and the Tongue, between the Eagle-Stone and a Fœtus in the Womb, between the Latis Variolarum and Pustules of the Small-Pox, between the Blood Stone and Blood; between Crabs Eyes, the Lapis Judaicus, the Lady's Thiftle, Teeth of the Boar, Jaws of the Pike or Jack and pleuritick Pains; between the Roots of Figwort, or Knots of the Carduus Hæmorrhoidalis, and the

the Hæmorrhoids; between Rhubarb, or Celandine, and the Bile; and so of others; but besides that this Way of discovering the Virtues of natural Substances has been carry'd no great Length, it is in itself altogether absurd, the exterior Appearances of Things serving only to distinguish them from one another, but not to teach us the Effect they will have on any Part of the human

Body.

Galen and his Followers endeavour'd to deduce the Virtues of Medicines from their internal Qualities, and their Fault lay altogether in this, that instead of the real Properties of Bodies they substituted imaginary ones; among which are to be reckoned, in many Cases, even their four primary Qualities of hot, cold, moift, and dry, on which all the rest depended. They had no other Way of discovering these in Bodies but by the Taste and Smell, which are far from being sufficient to inform us of all their Qualities, though they be, in fome Instances, of very great Ufe. Thus we justly conclude, that all bitter Plants are good for Digeftion; that all Acids are proper to restrain the violent Motion of the Blood; and that all Plants of an aromatick Smell are agreeable to the Nerves and animal Spirits. The Tafte and Smell of natural Bodies therefore are not to be neglected in fearching for their Virtues, but only are to be kept within their due Bounds.

The modern Philosophers, in order to find out the Virtues of Bodies, have taken two different Methods; the one is to trace them back to their component Principles, and the other to observe their Effects: And both these Ways are still pursued by the Societies of learned Men in France, England, Germany, &c. By chymical Analyses the Principles of some mix'd Bodies have been so far discovered, as that by uniting these Principles

again, or other Substances like them, they have produced Compounds, exactly corresponding with those from whence the Principles were obtain'd. Thus nothing is more easy than to decompose, and again to form Sea Salt, Nitre, Vitriol, Allum, Brimstone, Bitumens, and many other mineral Substances; and by the Improvements that daily continue to be made in Chymistry, it is to be hoped that the Methods taken by Nature, in the Formation of mix'd Bodies, will at length be brought to Light. The Royal Academy of Sciences have been at an immense Pains in analysing Plants likewise, by distilling them, either fresh or after they have been fermented, but have been able to discover but very little Difference in their Principles. A large Quantity of Phlegm generally came over first, then an acid Spirit, an alkaline or urinous Salt, and lastly, a black fœtid Oil. From the Ashes of what remains, is obtain'd a lixivial Salt, fuch as Salt of Tartar, which runs per deliquium in the open moist Air; or a Kind of Sal Salfus, as I have already defined it, fuch as that of the common Wall-flower. Besides these Substances, which are got by Distillation from almost all Plants, there are others obtainable only from some of them. Thus from aromatick Plants, fuch as Lavender, Thyme, Sage, &c. a fubtle, fragrant, effential Oil generally rifes first. From a few Plants, such as Ellebore, Elleborastrum, Speedwell, Creffes, and others, a very fharp penetrating Spirit or Oil comes over with the first Degree of Fire, which is likewise obtain'd after the Plants have been fermented, but in a different Order. Sometimes the first Degree of Fire brings over an acid or urinous Spirit, sometimes an inflammable and very volatile Spirit.

These are the few Elements, or Principles, obtainable from Plants. We are not, however, to imagine that those which go by the same Name are exactly alike in all Plants. The fix'd Salts, for Instance, got from their Ashes, being originally derived from some Acid, must differ from one another in various Plants, as much as Acids themselves do. For the same Reason the acid Spirits, volatile urinous Salts, and even effential Oil must be different; and accordingly we obferve, that the effential Oil of Thyme, digefted with Spirit of Sal Ammoniac, gives a violet or purple Tincture, which many other effential Oils will not do. Wherein all these Differences precifely confift has not hitherto been fufficiently clear'd up.

From animal Substances we obtain a large Quantity of volatile urinous Salt, a thick Oil, very little fix'd Salt, and still less acid Salt. The same Substances being boil'd in Water yield a Mucilage, or Jelly, from which, by Distillation, the Principles already mentioned may easily be

got.

Though a perfect Knowledge of mix'd Bodies has not hitherto been gain'd by all the Labours which the Learned have undergone in Pursuit of this first Method, yet from the Analysis and * Composition of Principles, in Plants especially, fome certain Rules may be laid down for investigating their Virtues; but the peculiar or specifick Virtues of some mix'd Bodies have not hitherto been traced, because these, perhaps, depend either on some fine Particles which enter their Composition, and are too volatile to become the Objects of Sense and Experiment, or on the particular Disposition of the Parts of these Bodies hitherto undiscoverable. Upon one of these two Accounts it is, that we do not know whence the emetic

emetic Quality in Antimony proceeds, why the Jesuits Bark cures Agues, why Opium is Narcotic, why Cantharides affect the Bladder, why Arsenic is poisonous; but it is not impossible that when a sufficient Number of Observations and Experiments have been made, all these Things

may be brought to Light.

This brings us to the fecond Method used by modern Philosophers, to discover the Qualities and Virtues of most Bodies, that of observing their Effects. To compleat this, a great Length of Time will be required, but I can with Pleafure affirm, that daily Advances are made in it. This Method of Observation consists in mixing the Principles of Bodies obtain'd by chymical Analysis with other Substances already known, that by their Action on these, the Nature of them may be discover'd; and likewise in mixing these Principles, or the Bodies of themselves, from which they were got, with the Blood and other animal Liquors, or injecting them into the Veffels of living Animals, which Practice has afforded some very useful Discoveries.

The Substances, with which the Principles of mix'd Bodies have been mix'd in these Experiments, are chiefly the Tincture of Heliotropium, the Tincture or Syrup of Violets, the Tincture of red Roses, the Tincture of Mallow Flowers, the Solution of corrosive Sublimate, of Salt of Lead, and Salt of Tartar, Lime Water, an Insusion of Galls, the acid Spirits of Sea-Salt, Nitre, and Vitriol, Spirit of Wine, and others. Substances that abound with acid Salts turn the blue Tincture of Heliotropium red, and this Red is of different Degrees of Deepness, from Purple to the Colour of Bull's Blood, or of Fire, according to the Degrees of Acidity in the Subject. These Substances give likewise a red Colour to the Tincture of

Violets,

Violets, red Roses, and Mallow Flowers. Bodies which contain an acrid or alkaline Salt turn the Tincture of Violets, Roses, and Mallow Flowers green. If the Alkali be very weak, by mixing it with Spirit of Sea Salt, a few Bubbles will rife; if stronger, the Agitation and Hissing will proportionably increase; and by a very strong Alkali a great Effervescence is immediately produced. A very weak, volatile, urinous Salt will, after some Time, change a Solution of corrofive Sublimate to the Colour of Opal; a stronger Salt of this Kind brings the fame Solution to a pale Colour; and a very strong one to that of Milk, and gradually precipitates it: And the Quantity of volatile Salt being increased, this Precipitation will be made fuddenly; and when it is very great, the Solution will be coagulated. A fix'd alkaline Salt turns the Solution of Sublimate to a yellowish Colour, and, if weak, precipitates it gradually, but, if stronger, the Precipitation happens immediately, and the Solution acquires an Orange Colour. If there be any Vitriol contained in a mix'd Body, it will turn the Infusion of Galls purple or black. The least Portion of Sea-Salt contained in any Body will make a Solution of Sugar of Lead foul; and whatever contains Sal Ammoniac yields an urinous Smell, with the Solution of Salt of Tartar or with Lime Water. Refinous Bodies give Tinctures to Spirit of Wine, and by mixing these with Water the Resins will fall to the Bottom of the Veffel.

Experiments have likewise been made on the Blood, Serum, Bile, and other animal Fluids, by which it has been found, that some Liquors coagulate the Blood in the Veins, and attenuate that in the Arteries, & contra other Liquors attenuate or coagulate the Blood in both equally; from whence it appears, that there must be some Difference of the Blood in both equally.

rence between the arterial Blood and that in the Veins. The Juices of many Plants do not coagulate the Blood in the Arteries; among these are the Napellus, Deadly Nightshade, and other poifonous Plants; Black Ellebore of the purgative Class; Wormwood, Angelica, Masterwort, Arfmart, and others, that may properly be termed falutary. The Juices of almost all Plants change the Colour of the Blood, and a few, as Sage, Mint, Bugle, and Viper-grass turn it livid. Acid mineral Spirits turn the Blood to a thick black Coagulum, except Spirit of Sulphur, which feems to make very little Alteration either in the Colour or Confistence; and Borelli affirms, that he injected a Drachm of this Spirit into the Jugular Vein of a Dog, without any bad Consequence; but if Aqua Fortis, or any other mineral acid Spirit, be injected in the same Manner, tho' diluted with Water, the Creature prefently falls into Convulfions, and foon expires in great Torture, and on opening the Thorax, the Heart and Vessels are found to be fill'd with grumous Blood. A Solution of Salt of Tartar injected produces the fame Convulsions, Tortures, and Death. But here the Blood in the Heart and Vessels is not observed to be altered in its Confistence. By mixing the same Solution, or that of any other fix'd Alkali with Blood, as it runs from a Vein, it seems to become more fluid, but at the Bottom of the Vessel thick turbid Fæces appear, which are likewife observ'd, though in smaller Quantity, when Blood is mix'd with volatile urinous Spirits. Spirit of Wine prefently coagulates the Blood very much, and being mix'd with Serum, turns it to the Confistence of the White of a boil'd Egg. All acid Spirits likewise coagulate Serum, but alkaline Spirits do not change it. The yellow Colour of the Bile is by Acids changed to green, by Alkali's to a fainter yellow,

yellow, and by Bitters to a deeper yellow. Acid Liquors cause an Effervescence with Bile, but alcaline Liquors do not: Spirit of Wine, and all Acids, thicken it. All acid Spirits change the Colour of Urine: Spirit of Nitre, and the Phlegm of Vitriol, turn it to the Colour of Blood; but Spirit and Oil of Vitriol do not change it fo much. Acid Spirits do not make clear Urine turbid, or cause any Precipitation; but when Urine begins of itself to be turbid, they haften this Change; and for the most part likewise the Separation and Precipitation of its Contents. The fame Liquors thicken, for the most part, the Sediment of Urine, and change it to a red Colour: Sometimes, however, the Sediment being formed either spontaneously, or by the Help of Acids, shall, by the Addition thereof, be again diffolved; and afterwards a great Quantity of fandy or gritty Matter, of a reddish Colour, subside to the Bottom of the Veffel. Alcaline Salts turn Urine to a paler Colour, and thin its Sediment, especially volatile Alcali's; by which turbid Urine with a large Sediment, is fometimes rendered perfectly clear, all the Contents disappearing. Acids coagulate Milk, and feparate it into Curd and Whey: Alcaline Salts hinder this Coagulation; but if one Part of Milk be digested, in a slow Heat, with two Parts of a Solution of Salt of Tartar, the Mixture will become acid and transparent, and a few thick Clots will fall to the Bottom of the Veffel.

Some farther Observations have been made concerning the Effects of Mixed Bodies thrown into the Bodies of Men, and other Animals; by which some Substances have been found hurtful to the one, and harmless to the other. The same Quantity of corrosive Sublimate, which will only make a Dog vomit, will kill a Man. The Nux Vomica, which may, (as is believed) be safely taken by Men, is a Poison to Dogs. And the same may be said of Cro-

34 Of Fossil, Vegetable, and

mild Purgative, throws Dogs into Convulsions, and inflames their Stomach. Many Substances are fatal both to Men and Brutes: Of this Sort are the Roots of the Corona Imperialis, the Roots and Leaves of Henbane; which, being eaten, raise an intense burning Heat all over the Body, and disturb the Brain: The Fruit of the deadly Nightshade, which brings on a Delirium and Stupor, and sometimes a Sleep that ends in Death. The Napellus produces an intolerable Heat in the Throat and Breast, and as great a Cold in the Extremities, till Death relieves the Animal.

Many more Observations of this Kind might be added; but what has been already said, concerning the two Methods followed by modern Philosophers, in investigating the Virtues and Qualities of natural Mixed Bodies, is sufficient to demonstrate the Importance and Advantages of both, and to direct us in continuing the same Enquiries concerning the Effects of all Substances on the Human Body, and the Manner in which they are brought about; as

will appear by the few following Examples.

Let us suppose that the Virtues of the common Burdock are to be found out. The first Enquiry is, what the Leaves will afford by Chymical Analysis. From five Pounds of these Leaves, are obtained a Pound and Half of infipid Phlegm, two Pounds of acid Liquor, eight Ounces of an alcaline Urinous Liquor, a Drachm of concreted alcaline Salt, three Ounces of thick Oil, reckoning both what comes over, and what is burnt away by calcining what remains at the Bottom of the Retort; an Ounce of fixed Salt, and the same Quantity of pure Earth. From this Analysis, it is probable that Burdock Leaves, before they are analysed, contain more of a watry Liquor, than of any other Parts; that this Liquor is plentifully stored with a Salt of the Ammoniacal

moniacal Kind, composed of the acid and volatile Urinous Parts joined together; that the fixed Salt did not exist in the Plant; but that the effential Salt is, by the Force of Fire, converted into it, in the fame Manner as the Tartar of Wine, which is nothing but the earthy Part of that Fluid, overstocked with acid Salt, is, by Calcination, turned to a fixed Alcali. Again; the Leaves of this Plant are of a bitter Taste, and their Juice does not change the Tinsture of Heliotropium; which shews that the acid Salt in them is fo intimately combined with the alcaline, thick, fulphureous and Earthy Parts, as to have no separate Action in that State. These Leaves, when burnt, flash a little; from whence it may be concluded, that the Salt they contain is of the nitrous Kind. Therefore the chief Virtues of Burdock Leaves are owing to the great quantity of ammoniacal Salt contained therein, mixed with a fmaller Proportion of nitrous Salt and Oil; and the Effects, which they are observed to produce, are exactly anfwerable to this Conjecture about the Composition of them; for they are diuretick, fudorifick, pectoral, anti-hysterick, and proper in Fevers.

In like manner, the Leaves of Agrimony, in the Quantity of five Pounds, being chymically treated, yield four Pounds of an acid and almost austere Liquor, two Ounces of an urinous alcaline Liquor, two Ounces of thick Oil, six Drachms of fixed Salt, and an Ounce of insipid Earth. From this Analysis it appears, that this Plant contains very little Salt of the ammoniacal Kind, since no concrete urinous Salt is got from it; but the acid Salt, wherewith it abounds, joined with Earth, forms a Concrete, refembling Tartar, or Salt of Coral, combined with a large Proportion of Sulphur. Moreover, Agrimony has a faline Taste, a little astringent and acid, and its Juice turns the Tincture of Heliotropium to a faint red; so that its astringent and aperitive Virtues

36 Of Fossil, Vegetable, and

feem both owing to the fame austere Salt; for, though these Effects are contrary to one another, yet they often flow from one and the same Principle, the strengthening of the weak and lax Fibres of the solid Parts. Experience shews, that Agrimony has the Virtues which are supposed to arise from its Composition; for it is aftringent, detergent, resolvent,

vulnerary, and aperient.

The Roots of Bistort and Silverweed are aftringent, and stop the Flux of Blood, and, accordingly, are found to contain an aluminous Salt, joined with Sulphur; for, by Analysis, they yield an acid Phlegm, some Oil, and a little urinous Liquor, a ponderous Caput Mortuum remaining; and, as they are likewise of a styptick Taste, it is probable that the acid Salt and aftringent Earth, wherewith they abound, are united in a Concrete of an alumi-

nous Kind, upon which their Effects depend.

After the fame manner, from the Analysis of the common Mallow, its Manner of acting may be difcovered. From five Pounds of the Leaves and Roots, are obtained four Pounds of Phlegm, two Ounces of urinous Liquor, about Forty-eight Grains of concrete urinous Salt; four Ounces of Oil, partly fluid, and partly thick; fix Drachms of fixed Salt, and an Ounce of Earth. Whence it appears that this Plant contains an ammoniacal Salt, joined with Earth; and that the large quantity of Oil is, by its Union with the acid Phlegm, converted into a Mucilage; which, tho' it be destroyed by the Fire, is, in the Plant itself, the Cause of its emollient and lenient Effects. Oil, long beat up with Water and fine Earth, turns to a Mucilage; especially if a finall quantity of any acid Spirit be thrown into the Mixture. The Juice of this Plant, taken either inwardly or by Clyfter, is laxative; both as it moiftens and foftens the hard Excrements, and as it relaxes the

Fibres

Fibres of the Intestines, dried by Heat, and so become too tense and rigid for their natural Actions.

From five Pounds of the Leaves of common Toadflax, we get three Pounds of acid Phlegm, an Ounce of urinous Liquor, nine Ounces of Oil, three Drachms of fixed Salt, and an Ounce and half of Earth. This Plant therefore contains but a very fmall quantity of ammoniacal Salt, because no concrete urinous Salt followed the fecond Liquor. Its natural Salt comes nearest to Tartar, or to the Terra Tartari foliata. The whole Plant is of a faline herbaceous Taste, neither does its Juice at all change the Colour of the Tincture of Heliotropium. The Leaves being bruifed between the Fingers have a difagreeable Smell, fomething like that of Elder, These Observations, compared with the Analysis of the Plant, shew that it abounds with a fine Oil, refembling the fulphurous Part of Opium; whence it must be anodyne and resolvent, as Experience shews it to be.

Five Pounds of Earth-Worms yield a Pound and half of urinous Phlegm, and the fame quantity of urinous Liquor, much more penetrating than the former, five Drachms of concrete urinous Salt, feven Ounces of Oil, a Pound of Earth, and two Drachms of fixed Salt. Hence it is plain that these Animals abound with urinous Salt, involved by Sulphur in a large quantity, and mixed with a very small Proportion of Acid, much after the fame manner as Soot. They contain likewise much Water and Earth. If they are kept long enough to putrefy, and be afterwards dried, by being washed with Water, this Mass will yield a Salt that flashes with Charcoal; which shews that the ammoniacal Salt in them refembles that Kind of Sal Ammoniac, which is made with the Acid of Nitre, and an urinous Spirit. It is therefore eafy to conceive, that, when externally applied, they have an incifive, emollient, and detergent Virtue; and that, inwardly taken, they are diuretick and aperient.

From what has been hitherto faid, concerning the Manner of discovering the Virtues of Medicines, the following Rules, or Axioms, may be laid down.

- 1. Nothing is of greater Consequence in investigating the Principles by which Mixed Substances act on the Human Body, than the Observation of the Analogy that there is between them and Things commonly known; for it is only by comparing Things unknown with those that are known, that we come to discover their Virtues. Thus, for Instance, it is much more proper to attribute the Effects of Mixed Substances to the Sal Ammoniac, Tartar, Allum, Vitriol, Nitre, Sea-Salt, effential or fœtid Oil, contained in them, and fuch-like; than to have Recourse to Acids and Alcali, Fire, Air, Water, and Earth, which are never obtained pure from any Mixture; or to Heat, Cold, Dryness, and Moifture, by which the Properties of no Body can ever be discovered.
- 2. All Animal Substances contain a gelatinous Fluid, which is eafily extracted from Skins, Flesh, Bones, Horns, &c. by long boiling them in a large quantity of Water. This Juice differs but little from Blood and Lymph, and is chiefly composed of Sea-Salt, Sal Ammoniac, and Oil. If these three Principles are separated by the Force of Fire, or by Fermentation, a large quantity of alcaline urinous Salt, and also of thick Oil, is obtainable; but nothing like an acid Salt discovers itself, except in fresh Urine and Sweat; it being either all changed into an alcaline urinous Salt, by its Combination with Sulphur, or remaining locked up in the other Parts, in Form of fixed Salt, of which a very finall Portion is obtainable by Fire. Infects however, fuch as Worms,

Ants,

Ants, &c. are to be excepted; from which a fmall quantity of nitrous acid Salt may be got by Distillation.

3. It is not to be thought that all acrid urinous Salts are exactly alike: Some of them approach to the Nature of Sea-Salt, as volatile Salt of Urine, as appears by the Taste; neither is that so caustick as the Salt of Blood. Salt of Hartshorn is formed into little Branches, something resembling Horns; but Salt of Urine, when crystallized, runs into little Cubes. The same Observation is to be made concerning Oils; for the all animal Oils abound with active Parts, by virtue of which they are successfully applied to strengthen weak and paralytic Joints, to resolve Obstructions in the Nerves, and attenuate the Fluids of the Body; yet some of them are not only active, but caustick and irritating to a great degree; such as the Oil of Ants, Cantharides, &c.

4. All Vegetable Substances have an effential Salt, compounded of an acid, an urinous alcaline Salt, Earth, and Oil, as appears by their Analysis.

5. Mixed Substances which yield much acid Phlegm, and Earth, and have not a Styptick Taste, contain a Salt like Tartar, or Cream of Tartar; and which has the same Virtues with these.

6. If to the Parts just mentioned a Styptick Taste be joined, then the Salt they contain is of the alumi-

nous Kind, and its Virtues the fame.

7. Whatever gives a blackish, or purple Colour, to an Infusion of Galls, contains a Salt like Vitrol.

8. Whatever flashes with burning Charcoal, abounds with a nitrous Salt, or something near a-kin to it. Such Plants are Pellitory of the Wall, Marygold, &c.

9. Plants that contain a large quantity of viscid mucous Juice, by which the other Principles are involved,

volved, act chiefly by virtue of fuch Mucilage,

much after the manner of Gum Tragacanth.

10. There are fome Vegetables whose Action does not so much depend on their effential Salt, as on the fine Oil they contain, which is from thence termed their effential Oil. Whatever Plants have a strong aromatick Smell, abound with this Oil; and they yield it when distilled with a large quantity of Water.

Scent, act by virtue of the fœtid effential Oil they contain: Such are Rue, Castor, &c.

12. Substances that fmell like Opium, are lenient

and anodyne.

13. After all the Chymical and Physical Trials which we make, in order to discover the Nature and Action of Mixed Substances, we are not immediately to use them in Physick, till we are sure that no Inconveniency will attend them, either from their being already made use of by Physicians of our own Time, from the Authority of Writers that deserve to be believed, or from frequent Experiments made

with them upon other Animals.

14. The Rules already laid down may undoubtedly be of great Use, in discovering the Properties of Mixed Bodies; but there are other Medicines termed Specificks, whose manner of acting on the Human Body cannot be discovered by any Means hitherto known. Most of them have been found out by mere Accident; and more may still be found, by an accurate and unwearied Observation of all that happens to Men or Brutes, both healthful and diseased, from the Use of different Substances, either as Food or Physick. The Necessity and Usefulness of such Observations cannot be too much inculcated on Students in Physick, as being a more sure way to improve and extend that divine Art, than the most substances.

fubtle abstracted Reasonings of the greatest Theorists that ever lived. The Antifebrile Virtue of the Peruvian Bark was discovered by Chance. Some Trees which bear it being blown into a Canal, or Pool of Water, lay there till the Water acquired fo bitter a Tafte that no Person could drink it; one of the neighbouring Inhabitants, however, being feized with a violent hot Fit of an Ague, and finding nothing else to quench his Thirst, ventured upon a large Draught of this bitter Water, which cured him of his Fever and Thirst at the same time. This being made known by him, for the Benefit of his Neighbours, the fame Water was used by many, with equal Success: But the Trees coming at length to rot, the Water loft its bitter Tafte, and Virtue likewife; but upon a diligent Search after the Caufe of this Bitterness, they at length traced it up to the Bark of these Trees; which has ever fince been made use of, as the most certain Remedy for Intermitting Fevers of all Kinds.

PART II.

The Mineral Kingdom.

SECT I. Of WATERS.

HE Waters used in Physick are either Simple or Mineral. Simple, or pure Water, is a fluid transparent Body, void of Taste and Smell; but no Water can be found absolutely pure, that is, without any Mixture of earthy, faline, or sulphurous Substances. Those therefore are to be esteemed Simple Waters, in which these heterogeneous Bodies are not in so great quantities as to be obvious to our Senses; and the other Waters, in which these Substances are easily perceivable, are termed Mineral.

CHAP. I.

Of the more Simple Waters.

THE more Simple Waters here meant are those of Springs, Rivers, Wells, Rain, Snow, and Lakes. The best Water is that which is most limpid, thin, and light, altogether without Smell or Taste, which does not lie heavy on the Stomach, but

but foon passes; which is soonest hot, and soonest cools again; which soonest boils Flesh and Ligaments, and most readily mixes with Soap. The worst Water for common Drink is that which is muddy, stagnant, or impregnated with any bad Qualities of the Earth through which it passes.

Every body knows how much Water is used, both to extinguish Thirst, and in the Preparation of our Aliments and Medicines. Water is provided by Nature for the common Drink of all Animals, in all Countries; and is undoubtedly more proper than any other Liquor. It affifts the Digeftion and Distribution of our Food, and the Fluidity, Smoothness, and Sweetness of the Chyle, by preventing Acrimony, or too great Heat. It keeps the Urinary Passages free and open, promotes the due Excretion of the Fœces, and infenfible Perspiration. It allays the Heat, dilutes, and facilitates the Motion of the Blood, and all the other animal Fluids. It foftens the folid Parts, and renders them flexible when too rigid. On these, and many other Accounts, confirmed by certain Experience, it is advantageous both in Sickness and Health. Sick People ought to drink it warm; and even by those who are well, it should never be drank excessively cold; fuch Water being very offensive to the Nerves, creating Stupors, Palfies, and Cholicks, obstructing Digestion, and hindering the Motion of the Blood, and other Fluids. Neither is too large a quantity of warm Water without some Inconveniencies; it relaxes and weakens the Fibres of the Stomach, and, by that Means, carries the Contents thereof into the Intestines, before they are sufficiently concocted.

We must not here omit taking notice, That one Dr. Hancock, a Divine of the Church of England, has extolled Cold Water as a very great Sudorifick, and a never-failing Remedy in Fevers. He has attempted to prove, by Observations, that both In-

termittent

44 Of Fossil, Vegetable, and

termittent and Continual Fevers, even those of the Malignant and Putrid Kind, the Small Pox. Measles, &c. may be cured by drinking cold Water in the Beginning of the Distemper, till the Patient fweats plentifully. In Agues, just before the Fit, and in Continual Fevers before the Exacerbation, or at the very first Appearance of the Distemper, he orders Children to drink between fix and eight Ounces of very cold Water, and grown People between a Pint and a Quart, in the Space of a Quarter or Half an Hour; the Patient lying in Bed, and being covered no warmer than when in Health. In a very short time after a plentiful Sweat appears, or, at least, an agreeable and falutary Heat is diffused through the whole Body. This first Dose very often carries off the Distemper; but if it does not, it is to be repeated before the Paroxysm or Exacerbation, as before; and the Author declares that he very feldom had Occasion to repeat it above once more. There is likewise a Friar of Malta, Disciple to one Roveda. a Spaniard, that practifed Physick at Naples, who pretends to cure all Difeases both Acute and Chronical, by the Use of Cold Water alone. He orders his Patient to drink ten or twelve Pints, or more, every twenty-four Hours, and to use a very spare Diet; some of them having lived for twenty, thirty. and even fixty Days, upon nothing but Water; and it must be owned, that many have been cured by this Method. In Dysenteries, Inflammations, and Obstructions of the Viscera of the Abdomen, he fometimes throws in Water by way of Clyster, and with good Success. This Monk differs from Dr. Hancock in the Quantity of Water which he prescribes, and in this also, that instead of Sweating, he does what he can to make the Water pass by Urine or Stool; and, to this End, he does not allow his Patients to lie in Bed, but orders them to walk in the open Air. The Systems of these two Doctors seem,

as yet, more to be wondered at, than put in Practice. Time, and farther Experiments, must determine the

Merit, and fix the Limits thereof.

Water is likewife outwardly applied in Bathing. A warm Bath, moderately used, is healthful to most People. It deterges and opens the Pores, and, by the Water's infinuating itself into them, the Solids are relaxed and foftened, the Fluids diluted and attenuated; and the Circulation and Perspiration promoted. For these Reasons, it is found so beneficial to weary Limbs, and in violent Pains; and it is justly recommended, in Nephritick Complaints, Inflammations, and Obstructions of the Bladder, Kidneys, Intestines, and other Viscera of the Abdomen; and it has likewife been found of Service in fome Cutaneous Affections. It must, however, be obferved, that the Warm Bath is very prejudicial to fome Persons, especially if they have not been accustomed to it; such are those of a Plethorick Habit, or who are full of gross Humours, or subject to Catarrhs; as likewise it is seldom proper in acute Fevers, Deliria, Loosenesses, or Hemorrhages; and is more especially differviceable to those who labour under a Debility of some Noble Viscus; because the Fluids being attenuated and diluted, may be carried in too great Quantity, or with too great Force, to the affected Part. Laftly, Hypochondriacal Perfons feldom find any Advantage from it.

Though the Cold Bath be less agreeable, and much less used, the Use of it ought, by no means, to be rejected; because, if any Credit is to be given, either to the Ancients, or to many of the Moderns, it is a most powerful Remedy in many Cases. It is often recommended by Hippocrates himself; and it was a Custom among the Romans to go from the Hot Bath into the Cold; and Galen, who approves that Practice, says, that by this Means the Limbs and Skin are strengthened, and thereby Health confirmed, such

Persons

Persons being least liable to be affected by the Changes of Air or Weather. This Custom is thought to have been introduced by Antonius Musa, who having cured the Emperor Augustus of a dangerous Catarrh, by the Cold Bath, recommended it afterwards in almost all Diseases; and it was by his Advice that Horace lest the Hot Baths of Baiæ, as being hurtful to his Eyes, and used the Cold Baths of Clusium and Gabii, as he tells, Epist. 15. Lib. 1.

Musa supervacuas Antonius, & tamen illis Me facit invisum, gelida cum perluor unda Per medium frigus.

In Pliny's Time, Cold Bathing was fo much the Mode, that even Men of Confular Dignity strove to outvy one another in shaking and trembling in the coldest Water they could meet with; and Seneca valued himself on having the Title of Psuchroluta, and that he was able to dance in cold Water on the First Day of Fanuary. In all this there was undoubtedly an Excess. Bathing in moderately cold Water is of use to check the exorbitant Heat of the Fluids, to contract the Pores, to stop too great Perspiration, and to brace the Fibres of the Muscles, and thereby increase their Strength. Some Years ago, the Cold Bath began to be very much used in England, in Hectick Fevers, Hemorrhages, Inflammations, Eryfipelas, the Gout, Hypochondriack Affections, Barrenness, the Rickets, Convulsive Asthma, and many other nervous Diftempers. It is only to be used in the Summer, by Persons of a strong Constitution, and hot Temperament; infirm and aged Persons, and Children, ought to abstain from it, as also they who labour under a Suppression of the Hæmorrhoids, Menses, or Lochia, who are subject to Cholick Pains, or an Hemiplegy, or who have any Ulcers, either

either external or internal. The Cold Bath is thought to be dangerous in the Beginning of Fevers, but in the Declension of them, it is sometimes useful. The Patients are to be prepared for it by Bleeding and Purging, according as their Constitution and the Nature of the Disease require. They go in in the Morning fasting, and having dipped their Heads feveral Times, they fit up to the Neck in the Water, from two or three Minutes, to half an Hour, according as they are able to bear the Cold. Then their Bodies being wiped very dry, they put on a Flannel Shirt, and go to Sleep in a warm Bed. They continue it for three or four times, or oftner, if it be judged necessary; and during this Course proper Medicines are administred, and a Regimen observed. fuitable to the Distemper. But care is to be taken that they never use the cold Bath after excessive Venery, any violent Exercise, Purging, Vomiting, or whatever tends to diffipate the Spirits or natural Heat.

CHAP. II.

Of Mineral Waters.

MIneral medicated Waters are either Cold or Hot. The first are termed Acidulæ, because of the subacid or urinous Taste, which they are all supposed to have when fresh drawn. The other are called Thermæ, by which Word the Greeks expressed them. The only probable Cause that can be afsigned for the Heat of these Waters, is subterraneous Fire warming the Veins and Receptacles where they lie; and accordingly, we find them most frequent near Vulcano's, and they all smell of Sulphur or Bitumen, the most instammable Substances under Ground, and which

which are found in great Plenty in the Fields near fuch Springs. The Virtues of these Waters do not depend on their being Hot or Cold, but on the different Substances of which they are composed. These may be reduced to four Kinds, Earth, Sulphur, Salt, and Metal; from all of which though Water perhaps is never found entirely free, they will nevertheless serve as general Heads, under which all Mineral Waters may be classed; some one of them being commonly in a much greater Proportion than the rest, and the Virtues of these Waters depending chiefly thereon.

ART. I.

Of Mineral Waters mixed with Earthy Parts.

Mong the Mineral Waters that abound with A Earthy Particles, none is more in Use than the faponaceous Spring of Plombiere in Lorrain; the Water of which, at its Source, is limpid and warm, hath a greafy, foapy Tafte, but withal a little rough upon the Tongue. It contains a fine fat Clay, like Soap, and is mightily cried up in Difeases of the Stomach proceeding from Acidity, in an acid Difpofition of the Blood and other Fluids, Spitting of Blood, Hemorrhages, Confumption, convulfive Afth. ma, Afcites, Diabetes, Fluor Albus, Dyfentery, and in all Difeases of the Skin. Externally applied, it deterges and dries up Ulcers; and taken inwardly, it fometimes proves gently Cathartick. It is to be drank in the Morning fasting, from one Pint to Six. For the use of those, who have not the Conveniency of going to Plombiere, many artificial Waters of the fame Nature may eafily be prepared. About three Drachms of the faponaceous Earth, taken up at the Source of this Spring, may be diffolved in good common Water, or in any other that may be thought most proper for the Patient: Or, instead of this Earth,

Earth, Terra Sigillata, common Bole, Chalk, Coral, or Crabs-Eyes, reduced to an unpalpable Powder, may be mixed with Water in the fame Proportion. But nothing will better supply the Place of these Waters, than the White Drink very much used among the English, which is made in this manner: Take of burnt Hartshorn prepared, and fine Crumbs of Bread, of each two Ounces; boil them in three Pints of good Water, to a Pint and an half, and to the strained Decoction, add two Ounces of white Sugar, or of any proper Syrup.

ART. II. Of Waters impregnated with Salts.

F the Mineral Waters that contain Salts, some are impregnated with a Salt like Sal Gemme, some with Sea-Salt, and others with a fossile alcaline Salt, like the Natrum of the Ancients. Between the first two Kinds there is this Difference, that Sal Gem is pure and simple, whereas Sea-Salt is really compounded of Sal Gem, a fossile alcaline Salt, and a volatile urinous Salt, arising from putrified Fishes, Plants, &c. with some Portion of Bitumen. To this Mixture is owing the bitter Taste of Sea-Salt, and the agreeable Scent, which it yields, when chymically treated.

The Waters of La Trauliere in the Bourbonois, and of St. Pierre near Clermont, are impregnated with Sal Gem. Those of the Sea, of Bourbon Luncie in Burgundy, of Dancause, of Balarrue in Languedoc, of Bourges, and some others of less Note, owe their

peculiar Virtues to a Mixture of Sea-Salt.

The disagreeable Taste of Sea Water prevents the internal Use of it; but externally it is recommended for the Itch, Scurvy, Ringworm, Elephantiasis, Tumors, and Pains in the Limbs; and it is esteemed a Specifick in the Hydrophobia. In Places temore from the Sea, a strong Solution of Sea-Salt

A fossile alcaline Salt is found in the Waters of Archimbault in the Bourbonois, those of St. Reine, of Mont d'Or in Auvergne; which last, however, contain but a very small Portion of this Salt. These Waters are generally faid to be nitrous; not that they contain a Salt like what we now call Nitre, or Salt-Petre; but a Salt like the Nitre, or Natrum, of the Antients, which is of an alcaline Nature, very much refembling Salt of Tartar. For, after the Waters have been evaporated, the Salt that remains at the Bottom of the Veffel, being thrown upon burning Charcoal, does not deflagrate, like Nitre, but like an Alcali, causes an Effervescence when mixed with Acids, turns the Syrup of Violets green, makes the Solution of corrofive Sublimate turbid, and precipitates a yellow Sediment. The Waters that contain much of this Salt are cathartick and diuretick. They likewise attenuate thick viscid Humours, and are proper in Cases of Vomiting, Loss of Appetite, Cholicks, Palfy, Jaundice, and Nephritical Affections. It ought, however, to be observed, that no Mineral Waters are to be prescribed in a Suppression of Urine, except it be known that the Diforder does not proceed from a Stone; for, otherwise, the Ob-Aruction must be increased, to the great Detriment of of the Patient. These Waters are likewise used externally for dissolving Tumours and Schirrhus's, for discussing Obstructions in the Nerves, and for Palsies; and for these Purposes the Patient is ordered either to bathe, or to receive the Water falling from a great Heighth on the Part affected. By this last Contrivance, the Water penetrates further, the saline Particles dissolve the coagulated Fluids more effectually, and a greater quantity of Spirits rush towards the Part. In all Fevers, and other inflammatory Distempers, the use of these Waters, whether external or internal, is to be avoided; because the saline Spicula will irritate the Parts, and increase the Instammation.

Artificial faline Waters may be made, which shall be indued with the same Virtues as the Natural ones. Thus, with the Sal Catharticum Amarum, or Sal Mirabile Glauberi, a Water may be prepared like those impregnated with Sal Gem or Sea-falt, which purges gently, without Irritation or Heat; and may therefore be fuccefsfully used in Hypochondriacal Affections from a hot Cause, in want of Appetite, Cholera Morbus, Cholicks, and in all Diftempers that arise from a viscid Lymph, obstructing the Glands, which it both diffolves and evacuates. best way of making these Waters is this: Diffolye three Pounds of common Sea-falt in clear Water; and, having filtred the Solution through Cap Paper, drop into it highly rectified Oil of Vitriol, till the Effervescence ceases: Then distil the Mixture in a Glass Retort, and calcine the remaining dry Mass over an open Fire in a Crucible, which being afterwards disfolved in warm Water, and filtred as before, the Solution, evaporated to a Pellicle, is to be fet to crystallize in a cool Place, and the Crystals taken off from time to time are to be dried in the Shade, and kept for Use. An Ounce, or more, of this Salt, dissolved in a Quart or three Pints of warm

Water, is to be drank fasting in the Morning, in

the space of two Hours,

In the same manner may be made artificial Mineral Waters, of the fame kind with the alcaline falt Waters, with fixed Nitre, foluble Tartar, the Duke of Holftein's Salt, &c. Artificial warm Baths may likewife be prepared with what is called the Aqua Matris Nitri (Eau Mere de Nitre) or with Nitre and Tartar calcined in equal Parts. Thus, for the Palfy, Rheumatifm, or Sciatica, the following Bath has been found of great Service: Take the Leaves of Mallows, Marsh-Mallows, Chamæmile, Mellilot, Southernwood, Tanfy, and Sage, of each a large Handful; the Roots of white Briony, round Birthwort, and common Flower de Lis, of each four Ounces; Laurel Berries, and Jujebs, of each two Ounces, and a Pound of the Aq. Matris Nitri: Boil all these Ingredients in a quantity of Water sufficient for a Bath, which is to be used warm, Morning and Evening, at the greatest Distance from Meals; and while the Patient fits in this Bath, the fame Decoction may be pumped upon the affected Parts.

ART. III. Of Sulphurous Waters.

Sulphurous Particles are contained in many Mineral Springs, which may be known by their feetid inodorous Smell, like that of the Hepar Sulphuris, and by the Inflammability of the Sediment which is left after the Water is evaporated; for this being thrown upon burning Charcoal, fends out a fine blue Flame, and smells like burning Brimstone. The Waters that abound most with Sulphur, are those of Bagnole, near Argenteuil in Normandy; which, taken inwardly, are celebrated for Diseases of the Breast, Asthmas, Consumptions, Scurvy, Itch, and other Diseases of the Skin. They are used externally for the

the fame Purposes, and especially for the Rickets in Children. Artificial sulphurous Waters are easily prepared by quenching burning Brimstone several times in Water; but the disagreeable Taste thereof makes them unsit for internal Use. Several Preparations of Sulphur make more agreeable Waters; and a warm Bath of this kind, nothing, inferior to the natural ones, may be made in the following manner: Take equal Parts of Nitre, crude Tartar, and Sulphur; mix them well, and throw the Powder by Degrees into an ignited Crucible, and when the Dessargation is over, set the remaining Mass in a Cellar, to run per deliquium. Two Ounces of this Liquor, well siltred, will serve for a quart of Water.

ART. IV.

Of Waters impregnated with Metallick Particles.

I Know no Waters in France that are impregnated with any other Metal but Iron, viz. Those of Forge and Paffy. The Waters of Forge contain a fine ferruginous Earth, with a small Portion of Salt, of the Nature of Sea-falt. In those of Passy, befides the fame Kind of Earth, is found a Salt, refembling the Natrum of the Ancients. Both Waters have a ferruginous, or vitriolick Tafte; and, being mixed with the Infusion of Galls, they turn it of a blackish, or dark violet, Colour. The Waters of Passy operate by Urine and Stool, and are ferviceable in Vomitings, Loofeness, Spitting of Blood, a Suppression or immoderate Flux of the Menses, a Diabetes, Obstructions of the Spleen and Liver, Jaundice, Melancholy, and Hypocondriacal Diforders. In scorbutick Habits they open Obstructions of the Kidneys, Bladder, and Uterus; but are very prejudicial in Hectick Fevers. Chemistry furnishes us with feveral Preparations of Steel, with which thefe E 3

Waters may be imitated by Art; fuch are the Salts and Tinctures of that Metal; but the natural Water feem to me very much preferable to any that can be artificially prepared; because the Metallick Particles with which they are stored, are extremely subtle and attenuated; fo that they make no Alteration in the Heat or Transparency of the Water; and, merely by being exposed to the Air, they lose their Taste and Virtue; and likewise because they may be drank in much larger Quantities than artificial Waters, whereby the vifcid and coagulated Juices are more effectually attenuated, and too tenfe and rigid Fibres relaxed. For this Reason, the artificial Waters ought to contain a very great Proportion of simple Water; and where the natural cannot be had, the following feem to be contrived in the best manner possible to fupply their Place. Having reduced to Powder equal Parts of Filings of Steel and Tartar, pour upon them as much French Brandy as will stand four Fingers breadth above the Surface, and fet the whole to digest in the Sun, in a close Vessel, stirring it now and then, till the Mass is dry. This is again to be powdered, and new Brandy put to it, and the whole Operation repeated, till the Steel is perfectly diffolved. Then the Preparation may either be made up in Balls, or kept in Powder; and a Drachm thereof being infused in eight Ounces of strong Wine for one Night, the Tincture is to be mixed with two quarts of common Water, and the whole to be drank warm, in the space of two or three Hours in the Morning, fasting. A Water of the same Kind may be prepared, by diffolving ten Grains of the Vitriol of Iron in a quart of Water.

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SECT. II. Of EARTHS.

V E here confider Earth, not as a Chemical Principle or Element, but as a fossile mixed Body. Earths may in general be diftinguished into Clays and Sands. Clays confift of very fine Parts; and, being gradually wetted with Water, become first glutinous, and then turn to Mud. Being mixed with a great quantity of Water, they are a long time in fubfiding; and, when dried, they become very hard. Sandy Earths are a Congeries of Particies of different Sizes, Figures, and Colours. They never become viscid by being mixed with Water, but immediately fubfide. Common Earth is compounded of both these Kinds. The Medicinal Clays are of four Sorts; Argillæ, or Clays, properly fo called, Boles, Marls, and Chalks; of each of which in order.

CHAP. I.

Of Clays, properly so called.

CLAY, as here understood, is a ponderous Earth, dense, fat, viscid, and slippery. Being held for some time in the Mouth, it makes an Impression on the Tongue, something between that of Soap and Fat. When fresh dug, it may be moulded into any Figure, like foft Wax; and, by Fire, it may be made as hard as a Stone. The Species of Clay are almost innumerable; some are white, re-E 4 fembling

fembling Suet, fuch as that faponaceous Earth with which the Waters of *Plombiere* in *Lorrain* are impregnated; fome are variegated, like the different Kinds of Porphyry and Marble, as certain Earths found in *Bohemia*: Others are of an Ash Colour, Red, Black, &c. The Clays used in Physick are, the *Lemman* Earth, the Earth of *Malta*, and several other sealed Earths from *Germany*.

ART. I. Of the Lemnian Earth.

Terra Lemnia Dioscoridis, Espezyis wyos, seu sigillum Capræ veterum, Officin. Terra sigillata vera seu Turcica,

THE Lemnian Earth is a fat, viscid, slippery Clay, of a pale Red Colour. It is brought to us in little Cakes, or Troches, marked with different Characters, each weighing about four Drachms. It has its Name from the Island of Lemnos, where it is dug; and it is not a little furprifing to find how much this Earth has been celebrated in all Ages. Even in the Time of Homer and Herodotus, a great many very folemn Rites were observed in digging it. In Dioscorides's Days, it was made up with the Blood of a She-Goat, newly killed, and the Priests of Venus stamped it with proper Images; and from thence it was called Sigillum Capræ. In Galen's Time the Goat's Blood was omitted, but many other superstitious Ceremonies still remained; which, when Petrus Bellonius was at Lemnos, were laid aside, and others substituted in their place. It is dug, fays that Author, only on the Sixth Day of August; as much being then taken out, as is supposed to be sufficient for a whole Year. When the Vein is opened, the Greek Priefts rehearfe fome Forms of Prayer, at which all the confiderable Inhabitants of the Island, both Greeks and Turks, are present. The Vein being afterwards

afterwards closed, and covered with common Earth. the Inhabitants are forbid, under the feverest Penalties, to open it any more during that Year. The greatest Part of this Earth is fent to Constantinople, to the Grand Sultan, with whose Seal it is marked; the reft is fold to Merchants, by the Governor of the Island, fometimes with, and fometimes without, his Seal upon it. Bellonius remarks, that at Constantinople they have the Art of counterfeiting it fo dexterously, that the false Earth can hardly be distinguished from the true. That Lemnian Earth is reckoned the best, which, when bruised between the Fingers, or held in the Mouth, appears most like Fat, and contains leaft Sand. The Antients have faid much about the Virtues of this Earth; but there is some room to think that the Reputation it had among them, was more owing to the fuperftitious Ceremonies observed about it, than to its intrinsick Qualities. Dioscorides commends it as an Antidote against Poisons, and Dysenteries: Galen fays, that when outwardly applied, it heals all fresh Wounds; and Fernelius is of opinion that, whether applied outwardly or inwardly, it stops all Fluxes of Blood. Some have celebrated its alexipharmick Qualitys in all pestilential and contagious Distempers; but many of the Moderns think it to be a mere alcaline Earth, endued with no other Quality but that of absorbing Acids. This, however, must be a Mistake; because no Earths of this Kind raise an Effervescence with Acids; and it appears, by its Analysis, not to be altogether destitute of the Virtues attributed to it by the Antients. It yields a finall quantity of volatile urinous Salt, of a bituminous Oil, and of a Salt not much different from Sea-falt; whence we may conclude that this Earth is impregnated with a kind of Sal Ammoniack, mixed with a bituminous Oil, by which the Action of Acids upon it is prevented; and that its Virtues must be in some degree alexi.

alexipharmick, diaphoretick, detergent, and vulnerary. This fealed Earth needs no other Preparation than to be finely powdered, or diffolved in a proper Liquor. In Dysenteries, Ulcers of the Intestines, and Hæmorrhages, it may be administred in Draughts or Bolus's, in the following manner:

Take of Lemnian Earth, finely powdered, one Drachm; of Syrup of Quinces an Ounce; Plantain Water, and Knot-Grass Water, of each three Ounces: Mix them into a Potion, to be taken by Spoonfuls.

Take Lemnian Earth, Conserve of Red Roses, and of Hips, of each half an Ounce; of Syrup of Barberries a sufficient quantity to make them into a soft Electuary; of which the quantity of one Drachm is to be taken Morning and Evening.

Take of Lemnian Earth half a Drachm; Syrup of Clove-juliflowers an Ounce; the simple Waters of Balm, Viper-grass, and Blessed Thistle, of each two Ounces; of Treacle-water six Drachms: Mix and make them into a Potion; to be taken by Spoonfuls, several times in the Day.

In external Applications, this Earth is often joined with Bole, as we shall see in the proper Place.

The Lemnian Earth is used in Venice Treacle, in the Confection of Hyacinth, in Renodaus's Bezoardic Powder, in Hoffman's Orvietan, in the Antivenereal Pills of Charas's Pharmacopæia Regia, in that Author's Plaister for fractured Bones, &c.

The Inconveniencies that may arise from using this Earth too long, or in too great Quantities, are common to it with all the other absorbent Earths. They load the Stomach, by adhering closely to, or plai-

stering

ftering its inner Surface, which causes a very disagreeable Sensation; and, by shutting the Orifices of the Glands of the Stomach and Intestines, they hinder Digestion, and may occasion the Fluids that ought to be excreted there, to be carried to other Parts of the Body; from both which Causes many Disorders may follow. The way to prevent Accidents of these kinds is to give these Absorbents in small Quantities, diluted with much Liquor, and diligently to observe the Effects they produce.

ART. II. Of the Earth of Malta.

Terra Sigillata Alba, Cofficin.

THIS Earth, denominated from the Island where it is found, is of a whitish ash-colour; it is dug out of a Cave near the ancient City of Malta, and made up in Tablets, with various Figures marked upon them. It is celebrated for its alexipharmick Qualities in the Small-pox, Measles, and putrid Fevers; but, above all, it is thought to be an Antidote against the Poison of Vipers and Scorpions; which Virtue, they say, was given to it by St. Paul, when he was shipwrecked on the Island of Malta. Vessels are made of it, which are supposed to communicate its cordial Essicacy to the Wine or Water, which is poured into them. It is, however, very rarely used in Physick.

ART. III. Of German Sealed Earths.

IN the German Shops, fome other sealed Earths are to be met with; of which the Terra Strigo-niensis, and Lignitzensis, are the chief. The former, termed by the German Writers Axungia and Medulla Solis, is of a yellow Colour, fat like Soap,

and melts in Water, or when held in the Mouth. It is dug in the Clefts of hard Rocks, in the Hill of St. George, among the Gold Mines near Strigonium. in Hungary. The Magistrates take a great deal of care that it be duly prepared; and, being formed into little Balls, it is marked with the Seal of the Town, and is believed to be impregnated with the Sulphur of Gold. The Terra Lignitzensis, or Goldabengensis, called Axungia and Medulla Luna, is of a whitish ash-colour, and imagined to arise from Silver. Both these Earths are faid to be reful in Malignant Fevers, the Plague, Dysentery, Diarrhæa, and the Bites of venomous Animals. They operate by Sweat; and the Dofe is between half a Drachm and two Drachms.

CHAP. II. Of MARLES.

MARLE is a light, friable Substance, of a middle Nature between Clay and Chalk; being neither fo fat as Clay, nor fo dense as Chalk; it flicks to the Tongue, and is of various Colours. Of the different Kinds of Marle, only two are used in Physick. The first is termed Marga Alba, officin. and Medulla saxorum; because it is found in the Clefts of Rocks in Bohemia, and in the Cavities of some flint Stones (called from thence Geodes) as Marrow in Bones.

The other Marle, called Agaricus mineralis Ferdinandi Imperatoris, and Lac Lunæ Gesneri, is a light friable, fungous, white, infipid Earth, very much refembling the common Agaric. It eafily diffolves in Water, and turns it white. It is believed to have a refrigerating and aftringent Quality, and to increase the Milk of Nurses; being taken in the quantity

of one Drachm, either diffolved in Broth, or made up in an Emulsion. Some commend it as an Anodyne, and use it for a Tenesimus and Dysentery; and, externally, for drying Ulcers.

CHAP. III.

Of BOLES

BOLE is a ponderous Earth, more fat than Marle, but less so than Clay, styptic on the Tongue, staining the Fingers, and of different Colours; fome being of a deep faffron Colour, fome yellow, and others white. There are but two Sorts of Bole used in the Shops, the Armenian and Common. The first, called Bolus Armena vera officinarum, is a ponderous, fat, brittle Earth, of an aftringent Tafte, of a Colour between Red and Yellow. It is found in Armenia, but very little of it comes to us. It is not certain, whether that mentioned by Galen be the same with that of the Arabian, and latter Greek Writers; for the first was pale, and the other is of a faffron Colour. It is possible, however, that the fame Vein may afford Boles of different Colours, as we fee in the common Sort, which is found in the fame Spot of Earth, fometimes white, fometimes yellow, and fometimes red. The best Armenian Bole is that which is most easily reduced to a fine Powder in a Mortar, or dissolved in any Liquor; which is without Grit, and when held in the Mouth, feems to melt like Butter, leaving an aftringent Tafte on the Tongue. It is commended by Galen in Dysenteries, and other Fluxes, in Spitting of Blood and Catarrhs, especially those in which a thin Matter falls into the Thorax, and in Ulcers of the Lungs. The fame Author affirms, that in a great Plague.

Plague, all who used this Medicine were cured. Outwardly applied, it is drying and astringent, and is therefore proper to stop a Flux of Blood from fresh Wounds.

The common Bole is a ponderous brittle Earth, of a Colour between Yellow and Red, of an aftringent Tafte, and is found in may Parts of France. It has the fame Virtues with the former, and is to be met with in all Shops. As both these Boles are frequently mixed with Sand and Grit, the Apothecaries prepare them in the following manner:

They dissolve them in Water; and, after the Sand alone has subsided, they pour the turbid Solution into another Vessel, where it remains till the Water is clear; being poured off, the Sediment is dried in little Cakes, and kept for Use.

They may be prescribed to be taken inwardly, either alone, or mixed with sealed Earth, in this manner:

Take prepared or washed Armenian Bole, sealed Earth, and Venice Treacle, of each balf a Drachm; of Syrup of dried Roses, an Ounce; of Plantane Water, six Ounces; mix and make them into a Julep: To be taken by Spoonfuls, in Loosenesses, &c.

Take prepared Armenian Bole, Dragon's Blood, and Mastich, of each a Scruple; of Roch Alum, fifteen Grains; of Syrup of Comfrey, a sufficient quantity to make them into a Bolus. This Bolus is to be repeated every four Hours, till the Flux is stopped; together with a Draught of the Decoction of the Greater Comfrey Roots.

In Wounds and Contusions, these Boles, and the Sealed Earth, may be used thus:

Take of washed Armenian Bole, a sufficient quantity; beat it up with the White of an Egg and Rose-Water into the Consistence of a Cataplasm, to be spread upon Linnen Cloth, and applied to the Part affected, and keep it on by Bandages dipped in Oxycrate.

Take of Armenian Bole, Sealed Earth, and Dragon's Blood, of each two Drachms; Aloes, Myrrh, and Colcathar, of each one Drachm: Min them into a Powder, to be applied to the Part from which the Blood flows.

These Boles are used in several officinal Compositions, in the Confection of Hyacinth, Fracostorius's Confection, Gordonius's Troches, the Bezoardic Powder of Renodæus, the Ceratum Santalinum, and Plaister for Fractures, in the Pharmacopæia Regua of Charas.

CHAP. IV. Of CHALKS.

CHALK is a dense, brittle, earthy Substance, which readily stains the Fingers, and sticks to the Tongue, without any Astringency. Different Kinds of Earth come under the Denomination of Chalk; among which those used in Physick are the White Chalk, and Red Oker.

White Chalk, or Terra Cretica, is so called from the Island of Crete, where the best fort was formerly found; but we now meet with it in many other Coun-

tries. It raises an Effervescence with acid Liquors. and is therefore defervedly looked upon as an Alcaline, or Absorbent Earth. It is used with Success to allay the too great Acidity of the Juices of the Stomach; particularly in the Difease commonly known by the Name of the Heart-Burn; and also in Coughs, that arise from a sharp Phlegm. It is likewise serviceable in Hæmorrhages, and is said to kill Worms. In a Word, the Property of all alcaline Earths is not only to absorb Acids, but to allay the Acrimony of the Fluids, and especially to restrain the violent Motion of the Bile, by detaining the Salts and Sulphurs thereof in their fixed Parts. White Chalk is given alone, from ten Grains to a Drachm: It is likewise used in the Decoctum Cretaceum of Bates, which is thus prepared:

Boil half a Pound of powdered Chalk in three Pints of Water to a Quart; and, when the thicker Parts have subsided, pour off the clear milky Liquor, and add to it a proper quantity of Sugar of Roses, or of any other proper Syrup.

An Emulsion may likewise be made of this Decoction, by pouring it, by degrees, on two Drachms of each of the four Greater Cold Seeds, bruised in a Mortar; and then adding to the strained Liquor two Drachms of Chalk finely powdered, and five Ounces of the Syrup of Colt's Foot, Comfrey, or any other suitable to the Intention. The Patient is to drink plentifully of either of these Liquors.

Powdered Chalk is likewife given with Milk, to prevent its turning acid in the Stomach; and, externally, it is commended for drying Wounds, Ulcers,

and Fisfures in the Nipples.

SECT. III. Of STONES.

TONES are folid, hard, fossile Substances, not ductile, nor capable of being dissolved in Water or Oil. They are divided into Common and Precious. Common Stones disser from one another, as their Substance approaches most either to Clay, Sand, or Crystal; and as they are disposed, either in Filaments, thin Plates, or Squammæ. And to these may be added Figured Stones, and Petrisications. Precious Stones are opaque, imperfectly transparent, or perfectly so, which last are termed Jewels. Of all these various Kinds of Stones, very sew are used in Physick, though extraordinary Virtues have been ascribed to many of them; but these Conceits have had their Rise, not from any certain Experiments, but merely from Credulity.

CHAP. I. Of the Lime-stone, and Lime.

THE Limestone is a hard, ponderous, rocky Stone, of different Colours in different Countries. It is reduced to Lime by the Action of Fire upon it. If Water be poured upon Lime, it makes first a very great Noise, then grows hot, and afterwards turns to a soft white Mass; but calcined Lime-stones, if exposed to the moist Air for some time, may be reduced to a sine Powder. Quicklime

lime is Corrofive and Caustick, and is therefore never used inwardly. But, from a Lixivium of Quick-lime and Potash, the Surgeons prepare a Caustick, which burns the Part to which it is applied, leaving a Crust, or Eschar, behind. Slaked, or Washed Lime, does not corrode, but powerfully dries; and is applied in that Intention to obstinate Ulcers. The Water in which Quick-lime is washed, called Lime-Water in the Shops, is used externally to the same Purpose, either alone, or impregnated with corrofive Sublimate, in what is called Phagedenic Water, which is likewife used with Success to eat away fungous or fuperfluous Flesh; and, when mixed with Spirit of Wine, or Spirit of Vitriol, it conduces to stop the Progress of a Gangrene. Lime-Water, tinged blue with Vitriol of Copper, and intimately mixed with Oil of Roses, makes the famous Liniment for Burns; and, when impregnated with a Solution of Sugar of Lead till it turns Milky, it is applied, by way of Fomentation, to Scabs, foul Ulcers, and St. Anthony's Fire.

In the Opinion of Morton, and other experienced Phyficians, Lime may fafely be given inwardly, for the Cure of old obstinate Ulcers, whether internal or external. It is likewise very much commended for healing the Lungs; for, by throwing off the saline acrid Parts of the Blood through the Urinary Passages, the whole Mass being thus corrected, the Ulcers are much more easily cured. The Method of giving it

inwardly is this:

Take of Sarfaparilla, in thin Slices, six Ounces; Currants, half a Pound: Boil them in three Quarts of Water, and in the strained Decottion slack half a Pound of Quick-lime. After it has sufficiently subsided, pour off the Liquor by Decantation, and keep it in Glass Bottles, well corked, for Use. It is given in the quantity of four Ounces, two or three times

times a Day, at Medical Hours. Morton likewife recommends it for the Cure of scrophulous Tumors proceeding from the Measles.

Chemists have been at much Pains to procure the Salt, Spirit, Tincture, and Oil of Lime, but all to no Purpose; for what they pretend to have obtained from any of these Substances, came rather from what was mixed with the Lime, than from the Lime itfelf. Lime is used in preparing the volatile Salt of Urine; and the Sal Alcali Bafilianum.

CHAP. II. Of TALCK.

ALCK is a shining, fissile Stone, easily divisible into very thin pellucid Lamina, a little flexible. In the Fire it does not melt, is not calcined, nor does it lose its Colour. Some Talck is of a Silver Colour, called by the Chemists Argyrolithos; some Yellow, called Solar Talck; fome Greenish, and some Black. That which is brought from Venice is reputed the best, and is of a light Green Colour. This Stone is feldom used in Physick, but is very much in Vogue as a Cosmetic; the Ladies being of Opinion that it cleanses and whitens the Skin.

It is first of all to be prepared by being reduced to an impalpable Powder; which can be done no way fo readily as by heating it red hot feveral times in the Fire, and as often quenching it in cold Water; for, by this Means, it may eafily be levigated on a Porphyry Stone, to any Degree of Fineness, the Powder being of a shining Silver Colour, and very fmooth to the Touch. Of this Powder the Women make Ointments; or Pomatums, which they use as

a Wash. Some Chemists have endeavoured, by the Oil of Talck, to fix Quicksilver, and afterwards turn it into Silver; but they never considered that what they called Oil of Talck, was entirely the Product of the other Substances mixed with it.

CHAP. III. Of the Eagle Stone.

THIS Stone is made up of Scales, or stony Crusts, and is hollow within. In this Cavity there is fometimes another Stone contained, fometimes a kind of Gravel, and fometimes Clay. They are of a whitish, or ash Colour, and fometimes like Iron. Their outer Surface is rough and uneven, their Figure generally oval, and their Size various. Some Authors restrain the Name of Eagle Stone to fuch as contain either another Stone, or Gravel, and confequently make an audible Noise when shook; calling those which contain Earth Lapides Geodes; but I rather chuse to call all scaly hollow Stones, Eagle Stones; and apply Geodes to those which are as hard as Flint, whether they contain Earth, or are incrusted or lined with Crystal. is called the Eagle Stone, either because it is faid to be sometimes found in the Nests of Eagles, or from its Colour; or because, according to some, Eagles cannot hatch their Young without it.

It is found in many Places; but that which comes from the Levant is preferred to the rest. It is believed by some to be of wonderful Efficacy in promoting Delivery, if laid to the Woman's Thigh, who is in Labour; but if tied to the Arm, it is said to prevent Miscarriage. It must, they pretend, be removed immediatly after the Birth, lest it not only draw out

the Child, but the Uterus along with it; of which an Instance is mentioned by Valeriola, of a Woman, who having forgot that she had a Stone tied to her Thigh, the Uterus fell down without the Body, and she died instantly. But I believe it more probable that the ignorant Midwise had by ill Management extracted and bruised that Part, and afterwards, to save her own Reputation, laid the Fault on the Eagle Stone. Many other Fables are told of this Stone, but they are too ridiculous to bear being mentioned.

CHAP. IV.

Of the Fossile Bezoardic Stone.

THE Fossil Bezoardick Stone of De Laet, Fossil Bezoar Mineral of Boccone, Bezoar Mineral of Beslerus, and Geodes of Aldrovandus, is a scaly Stone, of a white or ash Colour, of various Thickness, and of an irregular Figure, fomething roundish. It is made up of different Coats, cased over each other, till they become of the Size of an Hazel Nut in some Stones, of a Walnut in others, and in some of a Goose Egg, and in the Centre of it is found fometimes a little Gravel, fometimes a fmall Shell, and fometimes a Bit of Pit-Coal. It is called Bezoar, from its Likeness to an animal Substance of that Name; or from the alexipharmack Virtues afcribed to it; for Bezahar is an Arabick Word, fignifying any Medicine possessed with the Virtue of expelling Poifons.

This Stone is found in many Places; in France, near Montpelier; in Sicily; in Italy, near Tivoli; and in New Spain, in the River Zbuatlau; from whence, according to Hernandes, very large Stones are brought. The

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Italians

Italians and Sicilians commend its Virtues very much against Poisons, in putrid Fevers, the Small-pox, and Measles; in changing the acid Disposition of the Blood, and calming its Effervescencies. It provokes Sweat and insensible Perspiration; being given from twelve Grains to a Drachm, in any convenient Vehicle. Empiricks pass these Stones upon the ignorant Vulgar for true Animal Bezoar; and indeed it is still uncertain, whether the Occidental Bezoar be an animal or fossil Substance.

CHAP. V. Of Figured Stones.

ART. I. Of the Belemnites, or Lapis Lyncis.

RELEMNITES, Dastylus Idæus, Lapis Lyncis Officin. Lapis Lyncurius of some Authors, is a round oblong Stone, ending in an obtuse Point, fometimes of a white, fometimes of a gold, and fometimes of a dark Colour. Some of these Stones are folid, others hollow, and it is diffinguished by Lines drawn from the Axis to the Circumference. It is commonly about an Inch in Length and Thicknefs, though fome have been found as large as a Man's Arm; and in every one of them there is a Fisfure or Slit running through its whole Length. The Name, Belemnites, comes from a Greek Word, which fignifies the Point of an Arrow; Dactylus Ideus, from its resembling a Finger in Shape, and its being found in Mount Ida in the Mand of Crete. But it is dug up likewise in the Alps, and many other Places of France and Germany. It is without Ground taken for the Lapis Lyncurius of the Antients, fince it is evident that by that Word Dioscorides understood

derstood Amber, which he tells us was by some taken to be the concreted and indurated Urine of the Lynx. The Germans say, that this Stone is good against the Night-Mare, and the Stone in the Kidneys. It is given in Powder, from half a Drachm to a Drachm, in any convenient Liquor.

ART. II. Of the Lapis Judaicus.

THIS is an oblong, roundish Stone, of the Figure of an Olive, marked with Streaks and Furrows, running from the Basis to the Apex, according to its Length, at equal Distances from each other. It is of a whitish or ash Colour, and shining within. It parts obliquely into thin Laminæ, and is given in Powder to the quantity of a Drachm, in any proper Vehicle. It was called Lapis Judaicus, or Syriaeus, from the Countries where it is found. By others it is named Euroius, as being of a diuretick Virtue; and Tecolithos, from its lithontriptick Virtue. This last Virtue I very much question, but it is plain from Experience, that this Stone, the Lapis Lyncis, Crabs Eyes, and feveral other things faid to have a Power of dissolving the Stone, are really diuretick. But it cannot be concluded, that, because oftentimes Gravel comes away with the Urine, therefore they have any lithontriptick Quality; for the fixed earthy Parts of these Stones being mixed and incorporated with the Salts of the Fluids in the Body, become thereby more fixed, and more unfit to pass off through the Pores of the Skin, but find their Way more eafily through the Strainers of the Kidneys. Therefore the Secretion by infenfible Perspiration being lessened, they are excreted in greater Quantities by Urine; and thereby whatever Saburra they find there, they wash away; and hence the Urine becomes turbid, and is fometimes mixed with Gravel, some Particles of which may be of a confiderable FA

Sige, when the Paffage is wide enough to transmit them. In this manner the diuretick Quality of these Stones may be accounted for; but neither Experience nor Reason give any Ground for attributing to them a lithontriptick Quality.

CHAP. VI.

Of some Stony Substances.

ART. I. Of the Glossopetra.

THE Gloffopetra is commonly a triangular Stone, with a broad rough Basis, but everywhere elfe fmooth like Horn. It is marked on the Sides with Impressions in the Shape of small Teeth, of a yellowish white Colour, and of different Magnitudes. It has the Name of Gloffopetra, because it has been thought to be a Serpent's Tongue petrified; but this must be a Mistake, because the Tongue of a Serpent is not triangular, but round and bifid; and befides, it is now found that they owe their Original to the Teeth of the Sea-Dog, or some other Fish of that Kind. There is another smaller kind of Glossopetra, like the Tongue of a Magpie, which feems likewife to have been the Tooth of some Fish. It is thin, long, and sharp, and of the same Colour with the larger kind, with which it is often found. Some attribute an alexipharmack Quality to these Stones, but with us they are only used by Women to hang about their Children's Necks, while they breed their Teeth.

ART. II. Of the Fossil Unicorn.

THE Fosfil Unicorn, or Lapis Ceratites of Gefner, is a stony Substance, resembling in Colour, Smoothness, and Shape, the Horns, Teeth, and Bones of Animals. It is made up of an Outer hard Part of a yellowish, blackish, or ash Colour, and a soft, friable, compact Medullary Part, without Pores, of an astringent and drying Quality, sticking very close to the Tongue, and sometimes of an

agreeable Smell.

It is often dug up in the Form of Bones turned to Stone, among which we often find the Dentes Molares, and Incifory, and we can perfectly diffinguish between the Root of these Teeth, and that Part which appears without the Gums. Sometimes we meet with Fragments of the Radius and Tibia, reprefenting the natural Conformation of these Bones in a very perfect manner. There are likewife dug up large Branches and Trunks of Trees, in which the Species of Wood is still distinguishable. There is therefore no room left to doubt, but that thefe ftony Substances are really Petrifications of the Horns. Teeth, and Bones of Animals, or of Wood; which being putrified by remaining long under Ground, and in a manner calcined, their Substance becomes more rare and porous; as we fee daily in rotten and worm-eaten Wood, By the Afflux of a fine Marl dissolved in Water these porous Substances are filled. and the Water infenfibly evaporating, the Remainder incorporates with the Bones or Pieces of Wood into a stony Substance, of the same Form and Figure with what they were before. But if these earthy Parts, which concrete with them, be of the Crystalline, or Flinty Kinds, then they turn to a Substance like Crystal or Flint, as we see in several Sorts of Fossil Shells.

The Unicorn Fossil is found in many Places of Germany; and at Mont-Martyr, near Paris, there were lately found many Bones hid in a stony Substance. The Germans esteem it for its astringent, alexipharmack Qualities, and as a Provoker of Sweat; and, accordingly, often use it in Diarrhæas, Dysenteries, Hæmorrhages, the Fluor Albus, Malignant and Pestilential Fevers, and in the Epilepsy. The Dose is from Ten Grains to a Drachm. But they do not use all Kinds of it indifferently, but chuse that which has a pleafant Smell, and which has been previously tried upon Dogs, or other Animals; because it sometimes contains a poisonous Quality. especially when dug out of the Earth, mixed with Arfenic; and therefore great Care is required about it.

CHAP. VII.

Of Opake Precious Stones.

ART. I. Of the Lapis Lazuli.

HIS is a hard blue Stone, with Gold or Silver coloured Specks and Veins, and it is found of two Kinds; one that can bear the Fire, the other that cannot. The first is brought from Asia, and Africa, and is called the Oriental Stone; the other is found in some Places of Germany and Italy, being dug out of the Gold, Silver, and Copper Mines, and is softer than the Oriental. The Oriental produces the Ultramarine Blue, which never changes with Age. But the German Ultramarine is easily affected by external Causes, and in Time turns Green. The best Lazuli is of a deep blue Colour, marked with

with fome Gold Specks, hard to break, and durable in the Fire.

It purges Upward and Downward, and is recommended by Authors in melancholy Affections, Quartan Agues, Apoplexies, Epilepfies, &c. They attribute to it a corroding Quality, with some Astringency; the first of which Dioscorides and Galen say may be corrected by washing it in Water; but they are mistaken; for, both washed and unwashed, it vomits and purges; and what the Water carries off from it differs from what remains only in the Fineness of the Parts. The blue Colour of this Stone arifes undoubtedly from fome Parts of Copper mixed with it, to which also its purgative Quality is owing; but it may very reasonably be asked, why an acrid and purgative Medicine of this Kind, should be used in the Confectio Alkermes, defigned for a strengthening Cordial? To answer this, it is to be confidered that the ancient Physicians acknowledged two Virtues in this Stone, one purgative, the other ftyptick; which, though contrary to each other, were nevertheless found in the fame Subject. The styptick Quality, by which it becomes a Strengthener, they counted natural to it, when it was found in Gold Mines, mixed with fmall Particles of Gold; the cathartick Quality they confidered as merely accidental, arifing from the Mixture of heterogeneous Parts. fore, on account of the strengthening Virtue of this Simple, they endeavoured, by various Ways, to correct the other, as by repeated Ablutions and Calcinations; but, whether they have fucceeded or not, is with me still a Doubt; tho' I must own, that long Experience has shewn, that no bad Accident ever happens from the Confectio Alkermes, rightly prepared. Whence it may be conjectured, that by Calcination the purgative Virtue of the Stone is very much lessened, or entirely destroyed; but I cannot fay that it contributes any thing to the cordial Virtues of

of the Confection. The Ancients thought it purged off particularly the Atra Bilis, but, I am afraid, upon no good Grounds; for the black Colour of the Stools after taking it, is not fo much owing to the Nature of the Fæces, as to the Tincture which all Steel and Copper Medicines communicate to them.

As there are many Medicines of more certain Efficacy among us, we feldom use the Lapis Lazuli in any thing but the Confection already mentioned; all the Magisteries, Tinctures, and Elixirs, which the Chemists prepare from it, being laid aside.

ART. II. Of the Armenian Stone.

THE Armenian Stone is opake with green, blue, or blackish Spots, smooth, and marked like the Azure Stone, with gold-coloured Specks, and friable. There is indeed but very little Difference between the two Stones, they being often found in the same Glebe, and used indifferently for each other, as having the same Virtues; only the Armenian Stone is more strongly purgative. It is given from six Grains to a Scruple; and, externally used, it is detergent, with some degree of Acrimony and Stypticity. It is very feldom used in Physick, but the Painters employ it in making a beautiful blue Colour, with a greenish Cast.

CHAP. VIII.

Of Gems, or Pellucid Precious Stones.

ART. I. Of Crystal.

ROCK Crystal is a fost, transparent Gem, refembling Ice; and its Figure is that of an hexagonal Pillar, pointed at both Extremities; or it may be faid to be compounded of two Pyramids, with fuch a Pillar between them. A fecond Kind is found in Iseland, and in some Parts of France, especially about Troyes in Champaigne, which feems to be made up of Crystalline Plates, and fiffil in the Direction of all its plain Surfaces; and when reduced to Powder, it still retains a rhomboidal Figure, fo that even the finest Powder viewed through a Microfcope, shows a Congeries of very small rhomboidal Solids. Another Property of this Crystal is, that all Objects feen through it, appear double, which arises from a double Refraction of the Rays of Light. A third Species of Crystal is that mentioned by Dr. Lyster in the Philosophical Transactions, which is very fmooth, pellucid, and gliftering, coming near to a Diamond. Its Figure is spherical, oval, depressed, and sometimes representing an Hemisphere, or Hemispheroide, and in others roundish and irregular. It is very hard, and has an exquisite natural Polish, and is dug up in Pieces of different Sizes, in feveral Places of England.

Crystal is said to have an astringent and lithontriptick Virtue, and hence is prescribed by some in Loosenesses, the Fluor Albus, and in the Stone in the Kidnies or Bladder. What Judgment is to be made of the lithontriptick Virtue of these Stones, has been already said; and some go even so far as

to imagine that they rather conduce to the Generation than the Diffolution of Calculia

ART. II.

Of other Transparent Precious Stones that have been commonly used in Physick.

1. A GATE is a precious Stone, reckoned commonly between the Opake and Transparent. of different Colours, and marked with Spots, or Specks; which are imagined to reprefent Trees, Fishes, and other Things. The finest come from the East-Indies, the common fort from Germany, Bobemia, &c. Great Virtues have been attributed to this Stone, both cordial and alexipharmack; but they feem to be all imginary.

2. Onyx, or Sardonyn according to some, is different from the true Sardus. One Kind of it is opake, the other transparent, which is of the Colour of a Man's Nail, when the Blood appears in it, and from thence it has its Name. It is of an aftringent Quality, and has been used inwardly; and also outwardly, for Ulcers in the Eyes.

3. Sardus, Sarda, or the Sardian Stone, is very rare, and not perfectly transparent. We meet with two Kinds of it, one called Oriental, the other Occidental, or European, the former of which is the hardest. Both these were by the Antients termed Sardonyx. The fecond Kind is the Indian and Arabian, of which the former is pellucid, the other opake.

The Indian Sardonyx refembled both the Sardus and Onyx, its Surface being like the Onyx, or Human Nail; but its Root was white, like the Sardus, or of a Flesh Colour; and was mostly transparent;

though

though fome of them, being opake, were from

thence called Caca, or Blind.

The Arabick Sardonyx, called by fome Memphitis, was diftinguished by a black or dark blue Substratum, furrounded by a white Circle, and by its Surface being more or less white. This, by Jewellers, is

termed fimply Onyx.

The Antiens were of opinion that the Sardus, by a certain Irradiation, exhilarated the Mind, banished Fear, inspired with Courage, defended against the Power of Witchcraft and Poison. It is given in Powder to stop all Bloody Fluxes; but is very little used at this Time.

4. Hyacinth, fo called from its Resemblance to the Plant of that Name, in its yellowish red Colour; of which there being feveral Degrees, the different Kinds of it are taken from thence. Some are of the Colour of Red Lead, or Bilious Blood, fome of Saffron, fome of yellow Amber, which are the least esteemed. Hyacinths are distinguished into Oriental, which are brought from the East-Indies, and Occidental, which come from Silefia, Bohemia, Auvergne in France, and other Places. These Hyacinths feem to be different from that mentioned by the Antients, especially by Pliny, which was of a Thining Violet Colour, like the Amethyst, though not fo strong. Many superstitious Virtues have been afcribed to this Stone. They faid it was of a cold Nature, that it strengthens the Heart, is gently aftringent, and procures Sleep. Schroeder reckons it a great Specifick against Spasms and Contractions... It is an Ingredient in the Electuarum de Gemmis, together with the other precious Fragments, as they are called, and it gives its Name to the famous Confection de Hyacintho.

5. Sapphire, called by fome the Gem of Gems, is a hard Stone of a blue Colour, like that of the clear Sky. It comes nearest the Diamond in Splendor, Transparency, and Hardness, and is of two Kinds; one pale, called the Female Sapphire, the other of a deeper Blue, called the Male. There is a third Sort likewise, which has no Colour at all, and is sometimes made to pass for a Diamond, but

is neither fo hard nor fo brilliant.

Sapphires are brought from different Parts of the East Indies, called from thence Oriental. The reft are found in Silesia and Bohemia, called Occidental. The Colour of Sapphire may be taken out by Fire, and then it looks liker a Diamond; for which Reafon I believe this Colour to come from a small Mixture of fine Sulphur of Copper. Many are the inestimable Qualities superstitiously ascribed to this Stone; but, besides these, we are told that it raises and exhilarates the Spirits, resists Poison, and cures Ulcers of the Intestines.

6. Emerald, is a green diaphanous shining Gem, very pleasant to the Sight, but excessively brittle, which has given Occasion to many Stories. It is divided into Oriental and Occidental. The Oriental is the best in all respects; the other, which comes from Peru, is not near so bright, and besides, has generally some foul Spots. There is a third Kind of Emerald, or Pseudo-smaragdus, sound in the Mountains of Switzerland and Auvergne, which is extremely tender, and of the palest Green.

Fragments of Emerald thrown upon a clear Fire emit a fine Flame, and totally lose their Colour; which is Proof sufficient that this Gem contains some Sulphur of Copper. Besides the superstitious Uses ascribed to it, it is said to stop Fluxes of all Kinds. It makes Part of the Electuarium de Gemmis, and

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Confectio de Hya intho, together with the other precious Fragments.

Authors are very much divided about the Virtues of these five Fragments, as they are called. Some Modern Writers reject as fictitious all that is found in the Ancients, not only about their superstitious, but medical Virtues, and are therefore of opinion that they should be banished the Shops. Others believe that they are not altogether without Efficacy, being in their opinion alcaline Absorbents; but, if we confider that their Colours are owing to fome metallick Parts contained in them, we must be of opinion that they cannot be altogether destitute of fome other Virtue, befides that of being Absorbents, and that these Virtues come from their metallick Parts. It may here be objected, that Gems are the hardest Bodies in Nature, and cannot be dissolved even by Aqua Regia, and therefore must remain untouched in the Stomach, and pass off as they entered. But this Objection is of no Force; for an Emerald thrown upon live Coals kindles like Brimstone; and having lost its green Colour by the Fire. remains still transparent, and colourless, like Crystal. From hence we fee that Gems confift of two Parts; one Crystalline and Fixed, the other Sulphureous, or Metallick, and Volatile, which eafily evaporates, the former remaining entire and unchanged; and what is here done by the Fire, may be done by the natural Heat of the Stomach, and the Action of the Juices thereof; that is, the crystalline Part remaining undiffolved, the fulphureous Part may be separated from it, and, being mixed with the Fluids, act upon them according to its own Nature. If it be objected further, that this metallick Part is in too fmall Quantity to be able to perform fo wonderful Effects, as are ascribed to them; I answer, that the Energy of a Medicine does not always depend on its

Bulk or Weight. A very small quantity of Opium induces Sleep, and eases Pain. A very small quantity of Antimony, in the Emetic Tartar, will cause violent and long-continued Vomiting. And how small must that quantity of Matter be, in which the Poison of the Viper consists, which however infects in a Moment almost, the whole Mass of Blood, if once mixed with it through a Wound. We ought not therefore rashly to banish all Gems from the Shop-Compositions, which have been long in Use, and consequently long examined and approved of.

ART. III.

Of some Gems, never, or very seldom, used in Physick.

1. TOPAZ, or Chrysolithos of the Antients, is a pellucid Gem, of a shining Gold Colour, and of two different Kinds; the Oriental, which is very hard, and of the Colour of the purett Gold; and the European, which is soft like Crystal, and has a greater or less Mixture of Black in it. The Antients ascribed a Solar Nature to this Stone, and therefore made it to banish Fear and Melancholy in the Night-time, to improve the Understanding, prevent troublesome Dreams, and stop Hemorrhages, It is used only in the Confectio de Hyacintho.

2. Cryfolithus, or the Topaz of the Antients, and Cryfoprafius of some Writers, is a Gem of a green Colour, fainter than that of an Emerald, and with a small Cast of Yellow, the Rays of which passing through the Green, do sometimes give the whole a red Colour. It yields to the File; and, though it has had the same Virtues attributed to it as the other Topaz, it is never used in Physick.

3. Opal, is a beautiful Gem, of almost all Colours, according as the Rays of Light are refracted through it; it appears Blue, Purple, Green, Yellow, Red, Milky, and Black; and hence it has been by some called the Gem of Gems. The best Opals are found in India, the more ordinary Sort in Cyprus, Egypt, Hungary, and in some Danish Islands. They all grow in a soft Stone marked with black or dark Lines. It is said to have the same Virtues with the rest, but is never used in the Shops.

4. Ruby, is a pellucid ruddy Gem, a little inclining to Blue, and will not admit the File. On account of the Degrees of Splendor and Brightness found in it, it is usually divided into four Kinds: The true Ruby, Pyropus, or Carbuncle, so called because it is of the Colour of a lighted Coal: Balafius, which has but a small Degree of faint Redness: Rubicellus, not so pale as the former, but paler than the true Ruby: Spinaleus, which is softer and less shining than the true Ruby. The best are found in the Island of Ceylon; and very wonderful things are faid of the Virtues of this Stone, but they are all vain and superstitious.

5. Diamond, the hardest, most transparent, and most brilliant of all Gems. It is of the Colour of the clearest Water; but this Colour is sometimes mixed with White, Yellow, or Black, which are reckoned Blemishes. Diamonds consist of Crystal Lamina, or Strata, laid upon each other; and the Joinings of these Tables may be discovered by skilful Lapidaries, and then they are easily separated with the Edge of a Knise. Diamonds are not calcinable by Fire, nor changeable by the Sun's Rays, if the plain Surfaces of the Plates be exposed to them; but the Edges, or Extremities, easily admit the Solar Fire, and then they are separated as before, and afterwards

terwards melted into a Mass of Glass, which retains nothing of the Splendor of the Diamond. They are found only in the East Indies, and in Brazil, but are not used in Physick.

6. Amethyst, is a pellucid Gem, of a violet Colour, arising from a Mixture of Red and Blue, but not very vivid. It is found in many Places, but is not used in Physick. Chymists have endeavoured to extract Tinctures from these coloured Gems, but it is not certain whether ever they succeeded; or, if they did, what the Use of these Tinctures is.

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SECT. IV. Of SALTS.

Property Salts, I mean folid, friable, pellucid and fapid Mineral Bodies, diffoluble in Water, fulible by Fire, and eafily concrefcible in Form of Crystals. This Definition agrees to Alimentary Salt, Nitre, Vitriol, Allum, Sal Ammoniac, and Borax; of each of which in order.

CHAP. I. Of Alimentary Salt.

A Limentary Salt, or that which is used in Food, is distinguishable from all other saline Bodies by the cubical Figure of its Crystals, which Figure it retains even in the least Particles, which are the Objects of Sense. It is of two Kinds; being either dug

out of the Earth, from whence it is called Fossil Salt, or Sal Gem: or prepared by evaporating the Sea-Water, being from thence termed Sea-Salt.

ART. I. Of Fossil Salt, or Sal Gem.

THERE are feveral Kinds of this Fossil Alimentary Salt, differing from each other only in their Colour; which is White, Grey, of a yellowish Red, or pellucid like Crystal; which last, most properly called Sal Gem, is preferred to all the rest, as being judged must pure. It is of an octogonal, or cubical Figure, and salt Taste, pellucid like a Gem, and often resembles Crystal, both in Colour and Brightness. In the Mountains of Catalonia, near the City of Cardona, and also in deep Mines in Poland, near Cracow, huge Rocks of this Salt are found, and they beat them to Pieces with proper Instruments of Iron.

The Virtues of Sal Gem are the fame with those of Sea-salt, of which in the next Article. This Salt is used as a Stimulus in Clysters and Suppositories given to soften and evacuate the indurated Fæces, in this or the like Manner:

Take of despumated Honey, two Ounces; Sal Gem, a Drachm and an half; boil them to a due Confistence for a Suppository. Or, Take of Honey, boiled to a due Consistence, an Ounce; Sal Gem, and Species of Hiera, of each half a Drachm; Diagridium, fourteen Grains: Mix and make into a Suppository.

Take of the Root of Spanish Pellitory balf an Ounce; Leaves of Marjoram and Rue, of each an Handful; Leaves of Senna, Agaric, and the Pulp of Coloquintida, of each two Drachms; boil in a sufficient quantity of common Water to G 2

twelve Ounces, of strained Liquor; in which dissolve of Sal Gem two Drachms, and add of Emetic or Antimonial Wine, three Ounces, for a Clyster in Apoplexies, and other sleepy Diseases.

In these Affections even the strongest and most stimulating Clysters are sometimes of no Effect, because the Intestines are become Paralytic; and they are never to be used in an Inflammation of the Intestines. The Chymical Preparations of Sal Gem are the same with those of Sea-Salt. It is used in the Benedista Laxativa, and Pilulæ Polycbrestæ.

ART. II. Of Sea-Salt.

THE artificial Sea-Salt is obtained by the Heat of the Sun, or by Coction, from Sea-Water, and falt Springs or Wells. In Britany in France, the Manner of making Sea-Salt is, to dig shallow broad Trenches, which they line with Clay. Thefe being filled with Sea-Water by the Tide, the Heat of the Sun evaporates the Water, and a large Proportion of Salt remains behind. In Normandy, they make small Heaps of Sand on the Shore, which imbibe the Sea-Water, and the infipid Humidity being afterwards evaporated by the Heat of the Sun, the Salt remains among the Sand. To separate it, they first boil it in fresh Water, and then having strained off the Lixivium, containing now only a Solution of Salt in fresh Water, they boil it again with a gentle Heat in Leaden Cauldrons, to a certain degree of Thickness; then putting out the Fire, the Salt crystalizes.

Salt is made from falt Fountains likewise, by boiling the Water till the Humidity exhales; and while it is boiling, they mix with it either Gall or Bullock's Blood, which makes the Salt form itself more easily into larger Lumps; for the Parts of the

Gall

Gall or Blood invifcate or entangle the bituminous or earthy Parts, which hinder the Concretion of the Salt, and are altogether thrown up as a Scum, or

at least remain in the Strainers.

Sea-Salt prepared by the Heat of the Sun, is preferable, both for culinary and officinal Uses. Tafte of it is very well known; the Colour is greyish, because of the Particles of Earth mixed with it; but if it be diffolved and crystallized by a gentle Heat, it is formed into very white cubical Grains. Salt made by Boiling is white, but the Grains thereof are not exactly cubical, because of some Mixture of diffe-

rent Salts.

Before Sea-falt has felt the Fire, it changes neither the Syrup of Violets nor Tincture of Heliotropium, it makes no Effervescence with Ol. Tartari per deliquium, but discovers however some small Signs of Acidity. It lessens the Transparency of the urinous Spirit of Sal. Ammoniac, and darkens the Colour of the Infusion of Galls. By other Trials it seems likewife to discover an alcaline Nature, for it turns a Solution of corrofive Sublimate white, and makes an hot Effervescence with Oil of Vitriol. A Solution of Salt in Water being evaporated to a Pellicle, and then fet in a cold Place, the greatest part of it will be formed into cubical Crystals; but the Remainder cannot be brought to concrete without Heat; and even then it is formed into no regular Figure, and foon runs per deliquium in the moist Air. Hence it is evident, that Sea-Salt is made up of an Acid of a peculiar Kind, and of a Mineral Alcali, and that the acid Portion is fo far intangled and involved in the other, as hardly to be able to exert its proper Virtues in a concrete Form.

From Sea-Salt, by Distillation in a Retort, we obtain an acid Spirit, which turns the blue Tincture of Heliotropium into a purple Colour, and ferments vehemently with Oil of Tartar, but without any fensible

fensible Heat; but does not raise any Effervescence with Lime Water. This acid Spirit is the only Diffolvent of Gold and Tin, but cannot diffolve Silver or Lead; and it communicates this Quality to Spirit of Nitre and of Vitriol; which, by being mixed with it, becomes Aqua Regia. If this Spirit, when very pure, be faturated with the alcaline Salt of Tartar, it concretes into a Sal Salfus, refembling Sea-Salt in Tafte, and in the cubical Figure of its Crystals; whence it appears that Sea-Salt is an Acid perfectly faturated with an alcaline Salt. The Crystals of Sea-

Salt crackle and crepitate in the Fire.

Its Virtues are to check too great Fermentation, and to refift Putrefaction; and, for that Reason, it is used by Chymists in macerating Plants, to keep them from rotting; and what it does to Plants in macerating, is not different from its Effects on the Aliment in the Stomach; where it both checks too great Fermentation, and prevents Putrefaction. It likewife calms the too great Ebullition of the other Fluids of the Body; and, as it readily joins with volatile urinous Salts, and changes them into a Sal Ammoniac, it is fitted to foften the Acrimony of the Fluids, and promote the Depuration thereof by Urine. By its little Points, it likewise stimulates gently the folid Parts, and thereby increases their oscillatory Motion, by which Means all the Functions of the Body are better performed. On these Foundations are built all the Virtues afcribed to Sea-Salt, of drying, heating, deterging, digefting, opening, attenuating, increasing the Appetite, exciting to Venery, and of refifting Poisons and Putrefaction.

It is ordered in an Apepfia, or want of Digeftion, in want of Appetite, in Costiveness, and Obstructions of Urine, and is an Ingredient in the Unguentum Enulatum. It is much esteemed by the Chymists, as being the only Menstruum for Gold, and they prepare from it the acid Spirit of Salt, already mentioned, and the Aqua Temperata of Bafil Valentine, both used

in Phyfick.

Before the Salt is diffilled, fome Preparations are necessary, and especially Calcination or Decrepitation; for fince the Grains of Salt fly and crackle in the Fire, they would burst all the Vessels used in the Distillation, except the watery Fluid, with which they abound, were first carried off by Calcination. This Decrepitation arises from the watry Fluid contained and enclosed between the Particles of the Salt, which being rarified by the Heat, burst the Prison wherein they were detained, separating the Particles that surround them with a kind of Explosion. The Decrepitation or Calcination of Salt is performed in this manner.

The Salt is fet on lighted Charcoal, in an open Earthen Vessel, and stirred constantly with an Iron Spatula. As soon as the Salt begins to be thoroughly heated, it makes a crackling Noise, which increases for some time, and then ceases altogether. When all the Noise is over, the Salt is decrepitated, calcined, dried, and burnt, and remains in the Vessel in Form of a Powder. This decrepitated Salt serves for cementing Minerals or Metals, for the Distillation of Spirit of Salt, and for many other Chymical Operations.

Spirit of Salt is prepared thus:

Take of decrepitated Salt, one Part; of Potter's Clay, two Parts: Let them be powdered and well mixed, and then made into a Mass with a small quantity of Water. This Mass is formed into little Balls, of the Size of an Hazel Nut, and they being dried with a gentle Heat, are put into a Retort, coated with a proper Lute, so as to fill it half full. The Retort is set in a Reverberatory Furnace, and a

very large Receiver fitted to it; and the Fire is increased by Degrees till the Retort is heated red bot. The Spirit comes over in white Vapours, and when these cease to arise, the Distillation is over. Then the Receiver is taken off, and the Spirit is poured into proper Vessels, and there kept for Use. It may be rectified, if necessary, without the Addition of any other Substance, by only drawing off the insipid Phlegm in a common Alembic in Balneo Mariæ, till the Drops begin to be acid. The Spirit, now intenfely acid, remains at the Bottom of the Alembic, and is to be kept for Use. The Spirit of Salt may likewise be restified by the Addition of Zuich or Calamine, which are first disfolved in the Spirit, and then the Solution distilled with a Fire gradually increased. The inside Phlegm comes over first, which is to be thrown arway; then the concentrated, or restified Spirit, ascends free from all Mixture of Phlegm.

Spirit of Salt is made by Mixing it well with three times its quantity of Spirit of Wine, and then digefting them together for several Weeks in a gentle Heat. The Mixture acquires a very fragrant Smell, and is in this Manner kept for Use. This is the Aqua Temperata of Basil Valentine.

Besides the Chymical Uses of this Spirit, in disfolving Metals and drawing out their Tinctures; it is highly esteemed among Physicians, for promoting the Secretion of Urine, preventing the Stone, curing Dropsies, allaying Thirst in burning Fevers, and for conquering the Malignity of the Juices in the Scurvy. It is very properly given in Malignant Fevers, and in the Plague, either in the common Drink of the Patient, or mixed with as much Sugar as it can dissolve, into a kind of Syrup. The edulcorated Spirit is prescribed from three to twenty Drops, and and the Syrup in the quantity of an Ounce, and thus it may be exhibited to diffolve or expel the Stone:

Take simple Strawberry, or Burnet Water, of each three Ounces; of strong White Wine, six Ounces; Oil of Sweet Almonds, two Ounces; Spirit of Salt, a Drachm: Mix for three Doses, to be given every six Hours, as warm as they can be taken.

In Nephritic Pains, and Stones in the Kidneys,

Take simple Water of Pellitory of the Wall, and Burnet, of each three Ounces; Syrup of Violets, an Ounce; Spirit of Salt, fifteen or twenty Drops, or as much as will be sufficient to give it a grateful Acidity.

To prevent the Stone, this Spirit is taken every Morning for feveral Days, either in Broth, or in fome proper Apozem. In Dropfies, the dulcified Spirit, from fifteen to twenty Drops, or the acid Syrup already mentioned, are to be taken every Morning on an empty Stomach, in fix Ounces of the Decoction of Juniper Berries.

We must not here omit the Use of the Spirit of Salt in curing Hernia's, which was a Secret purchased by the Most Christian King for the Good of the Publick. The Spirit is mixed with Red Wine, in a Quantity suitable to the Age of the Patient, and thus drank for seven Mornings fasting; the Patient remaining for four or six Hours afterward without taking either Victuals or Drink; but if it should happen not to agree with the Stomach, then it may be taken only every other Day. For a Child from two Years old to six, the Dose is three or sour Drops, in a spoonful or two of Red Wine: From six Years to ten, let a Drachm of the Spirit be mixed with a Pint of Wine, for seven Doses. It is to be continued,

tinued, if necessary, for a Fortnight longer, in the same Manner. From ten to sourteen Years, the Quantity of the Spirit may be increased to two Drachms; from sourteen to eighteen, to two Drachms and an half; and after eighteen, to five Drachms. During sour Months after this Course is begun, a Steel Truss must be wore Night and Day, exactly fitted to the Rupture. The Patient ought never to sit down, but either to stand or lie; and neither run, ride, or go in a Coach, taking great Care to commit no Error in Diet. Under the Truss the sollowing Plaister is applied to the Part, being first shaved:

Take of Mastich, half an Ounce; Labdanum, three Drachms; Hypocystis, a Drachm; three dried Cyprus Nuts; of sealed Earth, a Drachm; Black Pitch, three Ounces; Venice Turpentine, a Drachm; yellow Wax, an Ounce; dry Comfrey Root, half an Ounce. Make into a Plaister according to Art.

Many Phylicians are afraid to use Acids, being of opinion that almost all Diseases arise from an acid Cause. But it is easily proved, that this Acid is destroyed in the Blood; for all animal Fluids, except Milk, contain Salts which come nearest to an alcaline Nature. This appears not only from their Analysis. by which no Acid, but a large quantity of alcaline Salt, is obtained; but also from their urinous Smell. while in a State of Fermentation or Putrefaction, and from the green Colour which they give to the Syrup of Violets. If Dr. Colebatche's Experiments may be relied on, by comparing the Blood in an healthful and morbid State, it appeared by Chymical Analysis, that the Proportion of Alcali in the morbid Blood was to that in found Blood, as fix to four. And to carry this Enquiry a little further; if an Acid can discover itself in any Disease, it would certainly be in Ulcers in the Lungs; and yet the purulent Matter of of these Ulcers discovers no Sign of Acidity, for it does not turn the Tincture of Heliotropium red, but, on the contrary, discovers manifest Signs of a strong Alcali, by turning the Syrup of Violets green. The Serum taken from dropfical Persons, the purulent Matter of Abscesses, and the chalky Substance found in the Joints of gouty Persons, produce the same Effects. If it be objected, that alcaline Salts have not Force enough to produce all those racking Pains, which venereal Patients, for Instance, are affected with, or that Erosion of the Parts found in the Scurvy, and other Effects of that Kind: I answer, that the Chymists every Day prepare Lixivial Liquors, which have as great a corrofive Power as the most powerful Acids. Cauteries, for instance, are nothing but alcaline Salts exalted to a great Degree of Causticity. From all which it is evident, that many Difeases arise more from an alcaline than from an acid Cause, especially those of the malignant and pestilential Kind; in which the Blood seems to be so far dissolved by an alcaline Salt, that it cannot be any longer contained in the Veffels, but breaks through them, and afterwards stagnating produces red Spots or Puftules; or, it feems to be so acid and caustick, as to corrode the Extremities of the Vessels, and thus bring on fatal Hemorrhages. The Practice of both ancient and modern Physicians is agreeable to this Hypothesis; for in many severe Diseases they recommend Acids as the most powerful Remedies, and attribute to these Salts a cordial Virtue, a Power of refifting Putrefaction and Poifons, of curing Fevers, quenching Thirst, raising the Appetite, of cooling, refolving, and discussing.

Acid Salts do both refolve and coagulate, but in different refpects: They refolve tartarous Concretions, and grumous Blood, by fubduing the alcaline Salts to which these Concretions are owing, and by stimulating the folid Fibres, they increase their Oscil-

lations.

lations, and confequently their Action on the stagnating coagulated Blood; which, being thus attenuated, is made to circulate more easily through the small Vessels. They coagulate the Blood when too thin, and the Bile when too much rarised, by inspissating the too exalted Sulphurs, and fixing the volatile Salts.

The most skilful Physicians never forget to give Acids in bilious, putrid, and pestilential Fevers, and in fcorbutick Affections; but, as vegetable Acids are very weak, and eafily conquered by the more acrid alcaline Salts, and turned to the fame Nature with these, mineral Acids are to be preferred, as more powerfully relifting Fermentation. However, we must not forget Riverius's Caution, that in Peripneumonies, spitting of Blood, Phthisis, and other Affections of the Lungs, (except those that proceed from a thick pituitous Phlegm obstructing their Veffels) in Inflammations of the Stomach, Intestines, and Liver, in bloody Urine, and Ulcers of the Kidneys and Bladder, Acids are not to be meddled with; because they irritate the inflamed Membranes by their sharp Spicula, and thus increase the Inflammation, and bring on violent Coughs, Cholicks, and other difmal Symptoms.

CHAP. II.

Of the Nitre, or Natrum, of the Ancients; and the modern Nitre, or Salt-Petre.

THERE is a very great Difference between the Nitre, or Natrum, of the Antients, and our Salt-petre; which we do not know whether the Antients were acquainted with or not; and, in like manner, their Nitre is almost unknown to us.

By

By Nitre, the Antients understood an acrid alcaline Salt, found in Egypt and other Places, which, as it made an Effervescence with Acids, was used as a lixivial Salt, for cleanfing Cloaths and for making Glass. Solomon mentions the Effervescence of Nitre with Vinegar, Prov. xxv. 20. where he compares a Man that fings Songs with an heavy or afflicted Heart to a Mixture of Vinegar and Nitre; which Antipathy, or Contrariety, cannot be understood of the common Nitre, or Salt-petre, which raifes no Effervescence with Vinegar. The Ancients frequently used their Nitre, or Apbronitrum, in Baths, and the Women in their Washes; whence Feremids fays, chap, ii. ver. 22. Though thou washest thee with Nitre, and takest thee much Soap, yet thine Iniquity & marked before me, faith the LORD GOD. This cannot be faid of Salt-petre, but of the Lixivium of that alcaline Salt, which was brought from Egypt by the Name of Nitrum, or Aphronitrum.

This Nitre eafily relented in the Air, fermented with Vinegar, and had an abstersive Quality; and even at this Time, in the Fields of Lesser Asia, near Smyrna and Ephesus, the Earth rises in small Hillocks placed very near each other, like Molehills, during the Spring and Autumn, of which the Inhabitants prepare a Ley for washing Cloaths; as also of the Salt they get from that Earth, by dissolving it in Water, they make Soap; as is related by the great Tournesort. This antient Nitre was likewise used to make Glass, being mixed with Sand; as they afterwards did with the Salt of the Plant Kali, or Glass-Wort, as may be gathered from what Tacitus says, Hist. 1.5. that the Sands of Palestine and Syria, near Egypt,

were made into Glass with Nitre.

It is evident therefore, that the Nitre of the Antients was quite different from ours. At this Time it is very little used and very rare in Europe, though it was very much in Use among the Antients, both

for making of Medicines, and for other Purposes of Life. The common Custom of Bathing alone confumed a vaft quantity of it. It ferved likewife for Dyeing, for feafoning Victuals, and for glafing earthen Vessels. Very little of it is brought us, and it is very hard to determine the Difference between the Aphronitrum, or the African or Egyptian Nitre, or Spuma Nitri, which I believe to be the Baurach of the Arabians, and the Grecian Nitre. Nitre was a native Salt, of a red or white Colour, and bitter Taste. It did not fly in the Fire like common Salt. nor flash like Salt-petre, but melted and rose in Bubbles, like Allum and Borax. It made an Effervescence with Acids; and hence I look upon it to have been of the fame Nature with Salt of Tartar. or Pot-Ash.

The Nitre of the Moderns, or Salt-petre, is a white crystalline Substance, of an acrid bitter Taste. with a certain Senfation of Cold, which concretes into long, fmall, and equally thick Prifmatic Crystals, of fix Sides, the outermost of which end in Points like Pyramids. It is eafily foluble in Water. and melts by Fire without Deflagration; and, if it be mixed with Brimstone or Charcoal, it detonates. Salt-petre appears fometimes in fpontaneous Efflorefcences on old Walls not much exposed to Rain. which may be called the Flower of Nitre, and is gathered only by fweeping it together with Brooms. It is likewife obtained from the Ruins of old Stables or Vaults, or from Earth that has imbibed the Urine or Fœces of Animals, by boiling them in Water; and may be made artificially, by mixing Earth with the Soil of Houses of Office, or with Pigeons Dung, the Salts of which are thus foon changed into Salt-petre. Since no Salt-petre is obtainable except from Earths impregnated with the urinous Salts of Animals or Vegetables, it is doubted by fome whether this Salt be of a Mineral or Animal Original. This we leave to be determined by others, but we chuse to follow the Example of the Generality of Chemists, in ranking it among Minerals, because it is extracted immediately from the Earth, and cannot be obtained from the Urine and Fæces of Animals without Earth. The Manner of preparing it is this:

When it appears by the Taste that the Earth contains a large quantity of it, they dissolve and dilute it with a great quantity of Water; and baving then strained off the Solution impregnated with Nitre, they boil it to a due Consistence, continually taking off the Scum that arises. Then they pour the Liquor, while warm, into Vessels, and leave it there for some Hours, till it is perfectly cold. In the mean time the Sea-Salt, of which there is always some quantity found in Nitre, concretes into little Grains, and falls to the Bottom. Then they pour off the nitrous Liquor, leaving the Sea-Salt bebind, and set it in a cold Cellar, to let it crystalize. When these first Crystals are taken off, they boil the remaining Liquor again, till it becomes thicker and more acrid, and then expose it to the Cold, in the same manner as before, to form new Crystals. By continuing this Process, an acrid, bitter Water at lengh remains, fat to the Touch, like Oil, which never concretes by Cold, and is called Eau mere de Nitre, The Mother-Water of Nitre; because being sprinkled upon the Earth, it disposes it towards the Generation of more Nitre. All the Crystals, by being dissolved in fresh Water, become purer; and this may be repeated two or three times. Sometimes these very pure Crystals are melted by a strong Fire, and all the Humidity being exhaled, they are suffered to concrete into a hard solid Mass, called commonly Rock-Nitre.

Pure Salt-petre melts in the Fire without Noife, but detonates ftrongly with Charcoal, and gives a vivid, not a faint Flame, leaving very little fixed Salt behind upon the Coals; but when Nitre crakles

in the Fire, it is mixed with Sea-Salt.

Salt-petre, well purified, is diftinguished from the other Salts, 1. by Detonation, or Deflagration, which happens when it is thrown on lighted Charcoal; for it never deflagrates, except a fulphureous Matter be joined to it. 2. By the Taste; for it affects the Tongue with a Sense of Cold and Bitterness together. 3. By the hexagonal prismatic Figure of its Crystals. Before it has been exposed to the Fire, it gives no Signs of Acidity; for it neither changes the Tincture of Heliotropium, nor Syrup of Violets. It does not curdle Milk, but it coagulates Blood a little, and thickens the Serum, and turns the Solution of corrofive Sublimate to the Colour of Milk, in about a quarter of an Hour. Like alcaline Salts, it likewife renders an Infusion of Galls turbid, and turns it to a white or ash Colour; and yet, which is very furprizing, it yields an acid Liquor by the Force of Fire, which turns the Tincture of Heliotropium and Syrup of Violets red like Fire, coagulates Milk in an Instant, and makes a great Effervescence with Ol. Tartari per deliquium, without any perceivable Heat, It likewise raises an Effervescence with Spirit of Sal Ammoniac, and generates Heat. This Liquor is the only Dissolvent of Silver, whence it is termed Aqua Fortis; and it communicates the fame Quality to Oil of Vitriol and Oil of Sulphur, which of themfelves are unable to make any Impression on Silver, but it leaves Gold untouched, Aqua Regia being the only Dissolvent thereof.

Salt-petre is esteemed by the best Physicians to have a refrigerating Quality, and to calm the Heat and Ebullition of the Blood, and is therefore recommended for allaying febrile Effervescences, quenching

Thirst,

Thirst, and preventing Putrefaction in malignant Fevers. Riverius fays that it has likewife a diaphoretick Virtue; and many have ascribed to it an anodyne Quality, and from thence have termed it the Mineral Anodyne. On the other hand, some have, without Ground, suspected it of a fiery and caustick Quality; for which they have had no other Foundation but the Authority of the Antients, who called their Nitre Caustick, and the Deflagration of our Nitre with Charcoal. To correct this imaginary igneous Quality, they order it to be burnt with Brimstone, or some such Substance. But, in the first place, all these Operations have proceeded from a Mistake; and, in the next place, these Concretions rather destroy than improve the natural Qualities of Nitre; and, accordingly, the best Chemists agree that Saltpetre well purified and crystallized, or melted, and formed into little Tablets, by the Name of Crystal Mineral, is to be preferred to all the other Preparations of it. It is given inwardly, in Substance from three Grains to twenty, three or four times a Day; or it may be diffolved in our common Drink, in the quantity of half a Drachm, or a Drachm, to a Quart. If it be taken in a greater Proportion, as that of an Ounce to a Quart, it will be apt to bring on a Loofeness. It is ordered in burning and putrid Fevers, in Pleurifies, Peripneumonies, Quinfies, and all other Inflammations; in Suppressions of Urine, in Inflammations of the Kidnies and Bladder, in a Suppression of the Lochia, in Hæmorrhages, spitting of Blood, gouty Pains, and in Cases of Melancholy; and we need not be afraid of bringing on unseasonable Diarrhœas in acute Diseases by the use of Nitre, as is well observed by that excellent Physician and Chemist M. Stabl, now first Physician to the King of Prussia, in his Dissertation on the Medical Use of Nitre, where he tells us, that he has often given it with Success in Diarrhœa's brought on H 2 in

in the time of malignant Fevers, or of the Small-Pox; for as fuch Diarrheœs are always fymptomatical, proceeding from two great a Colliquation of the Blood, Salt-petre, by gently coagulating the Blood, not only cures the Diarrhœa, but often allays other greater Symptoms, and, with the Affiftance of proper Medicines, quite carries them off. It is true that Nitre does fometimes bring on a Diarrhœa, but then it is always advantageous for the Patient. In an Inflammation of the Intestines, for Instance, Nitre will bring on a Flux; but then, as the Author observes, this does not happen till the Inflammation is gone; for then the noxious Juices, with which the Glands were replete, break through their Prisons, and force their way, through the Intestines, out of the Body. He observes likewise, that Nitre is used with great Success in Suppression or Heat of Urine, and in all inflammatory eryfipelatous Pains, In Cases of a Fever following a Suppression of the Lochia, he fays that by the Use of Nitre he has often found the Fever to be immediately calmed, and the orderly Flux of the Lochia to return. He used Nitre likewise as a Lenient in Paroxysms of the Gout, which not only ease the Joints, but the Diaphragm lik wife, thereby endangering the Patient very much; in the Hypochondriacal Heartburn, or that flatulent spasmodic Affection, which arises from too great an Afflux of Blood to the Orifice of the Stomach, or a flight Inflammation of that Part; and, lastly, in Hæmorrhages and spitting of Blood.

Though this great Physician is of opinion that no bad Consequences are to be feared from the internal Use of Nitre, yet in ulcerous Affections, and in Phthises, since it is found to do no Service in these Complaints, but may be thought to cause a greater

Irritation, he thinks it ought not to be used.

In Inflammatory and Malignant Fevers, Nitre may be ordered in this manner:

Take of the Diaphoretick Mineral, two Drachms; prepared red Coral, and Mother of Pearl, of each balf a Drachm; purified Nitre, a Drachm: Mix into a Powder, of which let a Drachm be taken every three Hours, in a Draught of Carduus Water.

Take of Bezoar, Mineral, two Drachms; purified Nitre, two Drachms; Campbire, one Drachm; Syrup of Cloves, or of Gitron Peel, a sufficient quantity to make them into an Electuary, of which a Drachm is a Dose.

Take the simple Water of Balm and Carduus Benedictus, of each three Ounces; Crystal Mineral, a Drachm; Syrup of Lemons, an Ounce: Mix them together, and make a Julep; to be taken by Spoonfuls.

. Salt-petre is feldom used externally, except in Gargles, for Roughness, Dryness, or Blackness, of the Tongue; and fuch Gargles may be thus made:

Take of pure Nitre, a Drachm; Houseleek Juice, or Water, five Ounces: Mix them together, and make a Gargle for the Tongue or Fauces. Or,

Take of fresh Butter, washed in common Night-Shade Water, two Ounces; Crystal Mineral, balf a Drachm: Mix them, and keep the Mixture in cold Water, to be taken in the quantity of a Pea or Bean, often in the Day, holding it long in the Mouth.

In Quinfys, Gargles may be made of Sal Prunel, or purified Nitre, in these Forms: Take

Take Barley-Water, mixed with Agrimony, fix Ounces; Sal Prunel, a Drachm; Syrup of Mulberries, an Ounce: Dissolve and make a Gargle. Or,

Take Plantane, Nightshade, and Honeysuckle Water, of each two Ounces; Honey of Roses, and Sal Prunel, of each a Drachm: Mix, and make a Gargle.

Crystal Mineral was formerly very much used in laxative Apozems and Decoctions; but it is now seldom ordered in such Intentions, except there be a Necessity of Purging when the Fluids are violently heated; for the Tinctures of Purging Medicines are much better extracted by Salt of Tartar, or fixed Nitre, and their Purgative Quality is much more increased by vitriolated Tartar, or the Arcanum Duplicatum, than by purified Nitre, or Crystal Mineral.

Some Physicians cry up pure Nitre, as a Specifick in Dropsies; and it has been for some time a mighty Arcanum among some Monks to mix it with a quarter Part of *Crocus Martis*, and to give sixteen Grains sour times a Day; and besides to dissolve a Drachm in a Quart of the Patient's common Drink, to be drank in a Day's time; and it must be owned that this Method has often succeeded.

Salt-petre has always been much used by Chemists, and called by various enigmatical Names; such as the Sulphurous Salt, the Infernal Salt, the Chemical

Cerberus, and the Earthy Serpent.

There are a great many Preparations of Nitre; fuch as, first, the Purification or Purgation of it, by which it is freed from the Sea-Salt, and a fort of fatty Matter contained in it. This is done by repeated Solutions and Crystallizations, in the Manner already mentioned. Secondly, Fusion, by which the Crystal Mineral, called by some Lapis Prunellæ, is prepared. Some mix a certain quantity of Sulphur with the

the Nitre, while melting in the Crucible; but by this they destroy the refrigerating Quality of the Medicine, and bring it to a fort of Sal Polychrestus. The third Preparation is Calcination with Sulphur, in this manner:

Take pure Nitre and common Sulphur, of each equal Parts; reduce them to a fine Powder, and pass them through a Searce. Then throw them gradually in small Quantities into a red-bot Crucible, and when the Deflagration is over, let the remaining Mass be calcin'd by a very strong Fire, for an Hour; then dissolve it in bot Water, and filtre it through Cap Paper, and evaporate it to Dryness; the Salt that remains will be very white, and of the same Virtues with the vitriolated Nitre, of which hereafter. It is named Sal Polychrestus.

Fourthly, Nitre is likewise calcined in a Crucible set in the middle of burning Coals; and when it is in perfect Fusion some Charcoal Dust is thrown in by Degrees, which causes a great Deflagration and Noise. When all that is over, throw in more Duft, and repeat it till the Nitre ceases to flame, and remains a dry, greenish, hard Mass. This is what is called Fixed Nitre, or Nitre turned to an alcaline Salt, which, by Solution and Filtring may be purified, and turned to a dry white Salt, of the fame Virtues with Salt of Tartar; and by diffolving it per se we obtain the Liquor of Fixed Nitre, which is the Alcaheft or natural Menttruum of G! auber, and is much celebrated among Chemists for the extracting Tinctures from the fulphureous mixed Bodies of all the three Kingdoms. Fifthly, by Distillation an acid Spirit is drawn from Nitre, in different Manners:

Take of pure dry Nitre, one Part; of Bole, or dry Clay, three Parts; powder and mix them very H 4 wella

well, and distil them according to Art in an Earthen Retort, in a Reverberatory Furnace, applying a very large Glass Receiver. The Spirit of Nitre will come over in red Fumes, called by Chemists the Blood of the Salamander. This yellow fuming Spirit is to be kept for Use without any farther Restification.

Another Way is to Take pure Nitre, one Part; Vitriol calcined to Yellownefs, two Parts; and to distil them according to Art, till the Fumes change from a red to a dark Colour. This Spirit is to be kept for Use by the Name of Aqua Fortis, or Aqua Separatoria, which last Name has been given it because it dissolves Silver, and separates it from Gold. It borrows nothing from the Vitriol, and differs in nothing from the Spirit made with Bole.

A third Way is to Take of pure dry Nitre, two Pounds; restified Oil of Vitriol, one Pound; let them be distilled to Dryness, and a very strong Spirit of Nitre will be obtained; a saline Mass remaining at Bottom, called Vitriolated Nitre, being the same that is got by Lixiviation from the Caput Mortuum of Aqua Fortis.

Both these Salts are celebrated among the Chemists by the Names of Arcanum Duplicatum, the Duke of Holstein's Salt, Panacea Duplicata, and Sal ex duobus; but they do not seem to differ from the Sal Polychrestus, or vitriolated Tartar, and, when rightly prepared, they may all be used indifferently. They are very fitly mixed with Purgatives, to increase their Virtue, and to attenuate the Humours. They operate both by Urine and Stool, given in the quantity of half a Drachm, or a Drachm. They are often ordered to be mixed with cathartick Potions, or alterative

rative Apozems, and an artificial Mineral Water made of them is very beneficial in Chronical Difeases arifing from an Obstruction of the Viscera.

It is to be observed, however, that vitriolated Nitre, and Sal Polychrestus, except they be very well calcined, excite a Nausea and Vomiting; and therefore, if they are perceived to retain any Taste of Vitriol or Sulphur they must be calcined asresh.

Aqua Regia is prepared from Spirit of Nitre, by diffolving in it a fourth Part of its Weight of Sal Ammoniac; and then it no longer diffolves Silver, but Gold only, and therefore has the Name of Lavacrum Minerale Solis. Spirit of Nitre is seldom given inwardly, and it ought always to be first mitigated or dulcified with Spirit of Wine, in the following Manner:

Take of pure Spirit of Nitre, one Part; rectified Spirit of Wine three Parts; digest them together for several Weeks, and the dulcified Spirit thus obtained has the same Virtues with dulcified Spirit of Sea-Salt.

It calms febrile Effervescences in malignant Distempers; and in flatulent Cholicks it is preferred to all the other acid Spirits, and for that Reason is by some called the Carminative, or Anti-Colick Spirit. Every body knows that Gunpowder is made with Nitre, Sulphur, and Charcoal; and the Pulvis Fulminans with Nitre, Sulphur, and Salt of Tartar. But these are seldom or never used in Physick.

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CHAP. III.

Som E derive the Name Vitriol from Vitrum, because it has the Colour and Transparency of Glass; in Greek it is named xanarbor, as if it were an Efflorescence of Brass, and in Latin Atramentum Sutorium, because it is used in blacking Leather. Vitriol is either Natural or Factitious. The Former is found in Crystals, or Strie, sticking to the Roofs of Mines; and the Latter is made by boiling the vitriolick Veins of some mineral Oars in Water, and afterwards letting them stand in the Cold to crystallize; or by corrupting and fermenting the Pyrites, or Marcasite, and then mixing it with Water, from which Vitriol is afterwards obtained by Coction and Crystallization. This Way of making Vitriol seems to have been unknown to the Greeks.

White Vitriol is brought from Germany, made up in Loaves like Sugar, and is of a sweetish astringent Taste. They are miltaken, who think that White Vitriol of Goflar is only the Green calcined by the greatest degree of Fire; for it is found in proper Mines, like a downy Efflorescence, which being dissolved in Water, to a due Confistence, is afterwards boiled till it concretes into a white Mass like Sugar. Sometimes little Pieces of it are found in the fame Mines. transparent like Crystal. This Vitriol contains an imperfect Iron Oar, or, perhaps, an Iron Oar mixed with Calamine, or Lead. Blue Vitriol is dry to the Touch, and concreted into blue Crystals, like Sapphires, of a rhomboidal Figure, flattened, and confisting of ten Sides. It is brought from several Places, especially from Hungary and Cyprus, and its beautiful blue Colour is owing to the Copper which

it contains. The Tafte of it is very acrid and austere. Green Vitriol has different Names from the different Places where it is found; as Roman. Swedish, English, French, &c. It contains a large Portion of Iron, from whence its green Colour is derived. It is kept in the Shops either in large rhomboidal Cryftals, or in Heaps of small cryftal Grains, fometimes a little unctuous, and flicking to the Hands. It is of an acid ftyptick Tafte; and indeed it cannot well be supposed to have any other, Vitriol being an acrid Salt, which having corroded Iron or Brass, coagulates with them, and concretes into a pellucid Mass, either of a green or blue Colour, according to the Metal which it has diffolved. Some Authors mention likewife Red Vitriol, but I have not hitherto been able to learn what it is.

Vitriol is obtained by various Arts, from Waters, Earths, vitriolick Stones, and especially from the Pyrites. In Galen's Time, blue Vitriol was made in Cyprus by the Heat of the Sun exhaling the Humidity of a vitriolick Water. In some Places of Hungary the fame Vitriol is now made by boiling and evaporating a Water of the fame Kind; and the green Vitriol is made by a Method not much different, in other Places of Germany. In fome Places it is made by frequent Ablutions of an ash-coloured Earth marked with Spots of different Colours, some of which look like the Rust of Iron, others like Verdegreafe, with a ftrong fulphureous Smell, and an unpleasant acerb Taste. This Vitriol is therefore composed of a Mixture of Iron and Copper, and accordingly its Colour is a Mixture of Blue and Green. In England, at the Distance of about a League from London, green Vitriol is made from the Pyrites, which are heavy, dense Stones, of a dark Colour on the Outfide, but their inner Surface is radiated from the Centre to the Circumference, the Rays shining like Bath Metal. They are perfectly inlipid

infipid to the Taste, and by being exposed to the open Air for a sufficient Length of Time, they acquire an inward kind of Fermentation, and spontaneously fall to Pieces. In the Cracks or Openings, we observe a certain fort of white saline downy Efflorescence, of an acid styptick Taste. Asterward the whole Substance of the Stone is dissolved, and salls into a fine Powder of a saline and vitriolick Taste, and sulphureous Smell. If fresh Pyrites be burned and calcined in the Fire, the Fumes which they emit smell like Brimstone, and a red Calx remains, which contains some Iron and Copper. The way of extracting Vitriol from the Pyrites is this

The entire Stones are spread abroad in a large Area, to the Height of about three Feet; and there they lie exposed to the Air for three Years, being turned once in six Months, that the Rays of the Sun may calcine them the better, and the Rains penetrate them more easily. By this Means they are reduced to a vitriolick Earth, which being well washed with Rain-Water, the Liquor is afterwards conveyed by Pipes into Cisterns. Then they boil it to a due Consistence in large leaden Vessels, throwing in a Quantity of old Iron, which is presently consumed by the Lixivium. Afterwards the Liquor is set to cool in other leaden Vessels, with Sticks fixed a-cross, about which the Vitriol crystallizes.

The Pyrites of Sweden and Leige are very full of Sulphur, and the Way of preparing Vitriol from them shall be related in speaking of that Mineral. Sulphur is obtained from these Pyrites, per Descensium, and then the ramaining Mass is calcined, and afterwards made into a Lixivium; which being strained, is boiled in leaden Vessels, and then set to crystallize, as before, in a cold Place.

A Solution of Vitriol turns the Tincture of Heliotropium into a faint Purple Colour, coagulates Milk,

Milk, turns Syrup of Violets to a greenish Colour, but does not change a Solution of corrosive Sublimate. When it is mixed with a Solution of Salt of Tartar, or Lime-Water, the Colour becomes a little yellowish, and it communicates a black or dark purple Tincture to the Infusion of Galls, which indeed is peculiar to Vitriol.

By Distillation an acid Spirit is obtained from Vitriol by a very great degree of Fire, called by the Name of the Spirit or Oil of Vitriol, which turns the Tinsture of Heliotropium and Syrup of Violets to the Colour of Fire, coagulates Milk and Blood, and raises a strong Fermentation and Heat with any alcaline Salt. The Oil of Vitriol, or that strong acid Liquor obtained from it by Distillation, when mixed with common Water, raises an intense Heat; with Sal Ammoniac it raises an Effervescence, but generates Cold, though the Fumes that arise feel hot.

After this Distillation is over, a blackish or red Earth remains in the Retort, called Colcothar, and it is the Calx or Crocus of either Iron or Copper, according to the Nature of the Vitriol that hath been distilled. From this Process it is evident that Vitriol is composed of an acid Salt subdued by metallick Parts, which is likewise easily demonstrated from the artificial Ways of producing Vitriol. If Spirit of Vitriol be poured on the Filings of Iron, a very good Vitriol is obtained; and if Copper-Plates, stratisfied with Sulphur, be calcined in a Crucible, the Water in which this Calx is made to boil for some time, if evaporated, will leave behind a true blue Vitriol.

The Virtues ascribed by Chemists to Vitriol, are past Belief, neither do we find the Event to answer their Promises. *Diascorides* mentions an Emetic Quality of it, and says that dissolved in Water it is good against Worms in the Intestines, and after eat-

ing

ing poisonous Fungi. He tells us further, that this Solution snuffed up the Nose purges the Head, and reckons it among the aftringent, heating, and caustick Medicines. Pliny commends it in Diseases of the Eyes, Fluxes of the Blood, and for the Cure of Ulcers, and Galen made use of it in Collyriums. At present it is used as an Emetick, Vermisuge, Styptick, Detergent, and Antiphlogistick, but is seldom given inwardly without Preparation. Externally, white Vitriol is chiefly used in Collyriums, to allay an Instammation of the Eyes, and stop their Running; and it is thus prescribed:

Take of white Vitriol, one Scruple; of Rose or Plantane Water, an Ounce: Let the Vitriol be dissolved in the Water, and strain the Solution, which, if it be too acrid, may be made milder by the Addition of more Water. Or,

Take of the common or Florentine Iris, a Scruple;
Rose and Plantane Water, of each three Ounces:
Boil them over a gentle Fire till a third Part be consumed, and in the strained Liquor dissolve eight Grains of Vitriol for a Collyrium.

Powder of blue Vitriol is applied to the Extremities of the Bleeding Veffels in Wounds, and ftops the Bleeding by cauterizing the Veffels, and coagu-

lating the Blood.

Among the Preparations of Vitriol, the first is Purification, called Gilla of Vitriol, in which white Vitriol is mostly made use of; it is purified by Solutions, straining, and drying, twice or thrice repeated; and then being taken from a Scruple to a Drachm at a Dose, in a proper Vehicle, will excite Vomiting. This is recommended by Paracelsus, and other Chemists, as an excellent Emetick, as not only cleansing the Stomach by gentle Vomiting, but also

also strengthening both Stomach and Intestines afterward by its Aftringency, whence it is given with Success in Diarrhoas and Dysenteries. This Gilla very much in use before antimonial Emeticks were known, and the Use of Ipecacuanha was discovered. but is now almost quite left off.

The Spirit of Vitriol is likewise obtained by Di-

stillation, in the following Manner:

Take any quantity of green Vitriol, calcine it to Whiteness according to Art, and then fill an earthen Retort two Thirds full of it, and distil it in a reverberatory Furnace. Begin with a gentle Heat to draw off the phlegmatick Part of the Vitriol; then increase the Fire by degrees, till acid Drops begin to appear; and then, having changed the Receiver, and well luted the foints, raise the Fire to the greatest degree, and keep it up at that Height for three or four Days and Nights, till the white Fumes cease to arise from the Retort. After this, having cooled all the Vessels, pour the Liquor in the Receiver into a Glass Retort, with a Glass Receiver fitted to it, and distil it again in a Sand Heat. The acid Liquor that comes over is termed Spirit of Vitriol, and the beavy and extremely acid Liquor that remains is termed Oil of Vitriol. This Spirit and Oil differ only in this. that in the former the acid Salt is dissolved in a greater quantity of Phlegm, than in the latter. If during the Distillation some Fissures, or Cracks, be made in the Retort, instead of the Oil of Vitriol, a volatile sulphureous fine Spirit will come over, as has been observed by M. Stahl, which is very much fought after and commended by Chemists. From this is prepared a celebrated Diaphoretick in acute Diseases, in this Manner: Take of the volatile Spirit of Vitriol, an Ounce; restified Spirit of Tartar, three Ounces; Treacle Water, five Ounces.

Ounces, and mix them together. This Medicine is fudorifick and anafeptick, and is given with Success, from a Scruple to a Drachm, in all malignant Diseases,

Spirit of Vitriol, like all other acid Spirits, calms the Ebullition of the Fluids, ftops Hæmorrhages, promotes the Excretion of Urine, often cures intermitting Fevers, when taken in the Beginning of the Fit, diluted with a fufficient quantity of Water, fo that the Liquor retain only a grateful Acidity. It may be dulcified by being digefted with Spirit of Wine. Oil of Vitriol is cauftick, and is used in many Chemical Operations, but its Virtues are the same with those of the Spirit, only it must be given in a smaller Dose; and the best way of exhibiting all these acid Spirits is to drop them into Water, till it attains a grateful Acidity.

Vitriolated Tartar is prepared by faturating the Oil of Vitriol with a fufficient quantity of the Salt of Tartar; and its Virtues are the fame with those of the Arcanum Duplicatum, or Sal Polychrestus; for it is of the same Nature with them. The Salt and Vitriol of Iron is made by digesting and dissolving Filings of Iron with Oil of Vitriol, and evaporating

and crystallizing the Solution.

The Mass that remains after the Distillation of Vitriol, called Colcothar, is a red Martial Earth, still impregnated with some quantity of acid Salt, and by often washing and drying it becomes an Astringent, which is used externally to stop Bleeding in Wounds; and from the Water in which it is washed, a Salt is obtained, called the fixed Salt of Vitriol, or Salt of Colcothar. When the Colcothar has not been much calcined, it remains white and pellucid, not emetick, but diuretick, and aperient. Though this Salt is so much fixed as not to rise by a very great degree of Heat, continued for several Days, yet it

is eafily made volatile by means of Borax, and is fublimed in the Form of Silver-coloured faline Flowers. This is the Sedative Salt of the great M. Homberg, and is thus prepared:

Take the fixed Salt of Vitriol well calcined, and Borax, of each two Ounces: Dissolve them separately in four Pints of warm Water; and then, having mixed the Solutions, pass the turbid Liquor through Cap-Paper, and then distil it in a Glass Alembic, to Dryness; which being done, white faline silver-coloured Flowers will be sublimed. These are to be gathered, and kept for Use. The fixed Salt that remains in the Bottom of the Alembic, by a new Effusion of Water, may be fitted for a new Distillation, which being continued to Dryness, fresh Flowers will arise; and this Operation may be repeated, till all the Salt is sublimed. The same Preparation may be obtained by taking Oil of Vitriol instead of the fixed Salt, and mixing it with twice its Weight of Borax. In this case there is no Precipitation, but nevertheless Flowers are raised of the very same Kind with the former.

These Flowers are almost insipid to the Taste, and not eafily diffolved in Water. They calm the feverish Heat of the Blood, and especially in burning Fevers; they prevent or remove delirious Symptoms. and allay spasmodick Affections, whether hypochondriacal or hysterical, at least for a Time. In a word, this Salt is an excellent Anodyne, and has a just Title to all the Virtues afcribed by Chemists to Vitriol, Sulphur, or what they call the Archaus Sedator. The Dose is from one to ten Grains, in any proper Liquor. It is however unfafe to order this Salt in Inflammations of the Lungs, spitting of Blood, and other Inflammations of the Thorax; for though it be insipid to the Taste, yet it contains latent Spicula, which

which being gradually difengaged in the Body, may irritate and vellicate the Membranes of the Lungs,

and fo bring on a Cough.

Vitriol is likewise the Basis of the famous Sympathetick Powder, to make which they calcine Roman Vitriol by the Rays of the Sun in the Dog-Days, to a white or yellowish Powder, and keep that Powder for Use in Vessels close stopped. Digby, and others, have said wonderful things of this Preparation, which are not confirmed by Experience. However, it certainly stops Bleeding, when applied immediately to the open Extremities of the Vessels; and hence some have endeavoured to cure Wounds by the Use of it, mixing only a small quantity of Gum Tragacanth in case of a purulent Discharge.

CHAP. IV.

ALUM is a Salt either natural or artificial. The Natural is either Liquid or Solid. Of the liquid Alum, two Kinds are taken Notice of by the Antients; one pure, the other impure. The Pure liquid Alum was very common and very cheap. It was a fmooth, limpid, or milky Substance, always moift. The Impure was always foul, being mixed with some other Substance, of a pale Colour, and rough. The Solid, or Concreted Kind, was by the Antients diftinguished, according to the Figure of its Parts, into Fiffile and Round. The fiffile natural Alum was either in Form of a compact, uniform Globe, or appeared divided into small Hairs or Filaments. The round Kind was fometimes of a more rare Texture, with the Appearance of Bubbles upon it, or full of Holes like a Spunge; and fometimes confifted of feveral Strata, or Crufts, laid over each other. The

The Factitious Alum is diffinguished only by the Countries where it is made, into a great many different Kinds; and if it is in large Masses, like Rocks, it is termed Rock, or Roche-Alum; and if it looks like the Fragments of Ice, it is termed Glacial, or Icy Alum. Factitious Alum was entirely unknown to the Antients, but with us is the only Kind in Use; for we now know very little of the Natural Kinds, which were formerly fo common. M. Tournefort found two Species of natural Alum in the Island Milos, or Milo; one was in Strata, or Crusts, of an aftringent Taite, and an ash Colour, covered with fome filamentary Efflorescences, which smelled like Aqua Fortis, but not near fo strongly. The other was the Capillaceous, or Filamentary Kind, or true Alumen Plumosum. It was in small Pieces, of the Thickness and Length of a Man's Finger, and might by beginning at the Ends, be eafily divided into fmall greyish Filaments, refembling a Tuft, or Pencil. It was foluble in Water, and melted in the Fire, and of an aftringent Tafte. Even in Diafcorides's Time, this Alum feems to have been confounded with the Lapis Amiantus; for that Author, talking of the fiffile Alum, observes that there was a Stone very like it, and that the way to diftinguish them was by the aftringent Tafte of the Alum, which the Stone had not; and he might have added, that it could not be melted by Fire, nor diffelyed in Water. The Hiftory of Medicines being afterwards quite lost in the Ages of Ignorance and Darkness, the Name of the Salt was given to the Stone, and from thence it is that it is, still found thus mistaken in some Dispensatories.

The Ways of making Alum are different in different Countries:

In Italy, near Puteoli, in a Plain called Solfatara, the Alum rifes in Form of Flowers sponta-I 2 neously

neously out of the Ground. These Flowers are swept into Pits silled with Water, and when the Water is sully saturated with the Salt, they strain it off into leaden Cisterns placed under Ground, till by the Heat of the Earth the greatest Part of the Humidity is evaporated; and then they set the Lixivium in wooden Vessels in a cool Place, to crystallize; which being done, the remaining Humidity is poured off, and the Crystals dried and kept for Use.

In the Mountains near this Plain, Stones are dug for Building, of which Alum is made in the same Manner as near Rome, which is this:

The Stones are sawed asunder, like Marble or Free-Stone, and then burnt in Furnaces in the same Manner as Lime-Stones, for twelve or fourteen Hours. After they are cooled, they are carried to a large Area, in which are several Trenches filled with Water, and there laid in small Heaps. These Heaps are watered from the Trenches three or four times a Day, for forty Days; and at length they begin to ferment, and be covered with a red Efflorescence. After this Preparation the calcined Stones are thrown into a Caldron, where they boil till the faline Substance of the Stones is dissolved. Then they convey this Lixivium, boiled to a proper Consistence, through Pipes or Troughs, into large Vessels of Oak, the earthy or stony Part remaining behind in the Caldron, and in about eight Days time the Alum sticks to the Sides of the Vessels four or five Inches thick. The Crystals are pellucid, and of a pale red Colour. The Liquor that remains uncrystallized is boiled over again, either by itself or with fresh Lixivium. The Crystals being separated from the Sides of the Vessel, and washed with clear Water, and afterwards dried,

are what is called Alumen Rupeum, or Rock-Alum, in the Shops, because it comes originally from Rocks.

The Way of making Alum in England, called likewife Rock Alum, is different from this, as the Mineral from whence it is prepared comes nearer the Nature of a Pyrites, and accordingly will yield Vitriol; and as the Alga Maritima, and other things,

are mixed with it.

Alum is a strong, astringent, acid Drier. The Native Alum fmells a little like Aqua Fortis, but the Factitious has little or no fmell. When thrown upon live Coals, it rifes in Bubbles, and melts in Water. The Crystals of Alum have eight Sides, representing an hexagonal Pyramid, with the Angles cut off, or they are bounded by four hexagonal and four triangular Surfaces. A Solution of Alum coagulates Milk, turns the Tincture of Heliotropium purple, makes no Alteration in the Solution of Corrolive Sublimate; turns the Infusion of Galls turbid and whitish; with Salt of Tartar it concretes into a white Coagulum, without any fensible Heat or Smoak; and often upon mixing this Solution with Oil of Tartar, an urinous Smell is perceived; but this happens only when the Alum has been purified with Urine, as in the English Alum; but there is no fuch Smell in the Roman.

By Chemical Analysis Alum yields an acid Spirit, not much different from Spirit of Vitriol, but not in so great quantity, nor so strong as the Oil of Vitriol; for that aftringent or absorbent Earth, which is the Basis of Alum, retains the acid Salt so firmly, that the greatest Force of Fire cannot separate them. What remains after the Distillation of Alum, will crystallize into Alum again, if it be first dissolved in Water, and then gently dried. From this Account it is evident, that Alum consists of an acid Salt of the Vitriolick

13

Kind, and an aftringent Earth like Bole, or Chalk. very closely united together. It is commended by Diascorides for stopping Hæmorrhages, fastening loose Teeth, bringing down Swellings in the Gums, stopping Defluxions of the Ears, Tonfils, Uvula, for eating away proud Flesh, curing Dimness of the Sight, cleanfing and drying Ulcers, checking spreading Foulnesses in the Skin, and for stopping any difagreeable Smell in the Arm-pits and Groins. The fame Authors observe also that unmarried Women have used Alum to procure Abortion, and to conceal the Fault they had committed. Hippocrates often used the Egyptian Alum, and that of Milos, in Pains of the Gums, and for various Kinds of Ulcers; but at present Physicians do not order it often. either internally or externally. In Fluxes of Blood it may be used inwardly, in the following Manner:

Take Rock-Alum, a Drachm; Plantane and Knotgrafs Water, of each three Ounces; add to the Solution, Syrup of white Thorn, an Ounce; for a Julep, to be taken by Spoonfuls.

Or, Take of Pure Rock-Alum, two Ounces; melt it over the Fire, adding in the mean time, of the finest Powder of Dragon's Blood, half an Ounce; and make this Mixture, before it grows hard, into Pills as big as a small Pea. The Dose is from a Scruple to a Drachm, every four Hours, till the Flux is stopped; and then once or twice a Day for some Days afterwards. After every Dose the Patient ought to drink a large Draught of some proper Liquor. But great Care is to be taken not to stop the Flux unseasonably, and therefore Bleeding ought to go both before and after it; and Clysters ought likewise to be administred from time to time, to prevent Costiveness, which commonly follows on taking this Medicine.

When

When it is proper to prevent or check a beginning Defluxion in a Quinfey, Gargles may be made with Alum, in this Manner:

Take red Rose Leaves, and Alum in Crystals, of each a Drachm; boil them in eight Ounces of Plantane Water, and in the strained Liquor dissolve an Ounce of Syrup of Mulberries, for a Gargle.

In Inflammations of the Eyes, the following Collyrium is excellent:

Let the White of an Egg be shaken or beat with a Piece of Alum, till it acquires the Confistence of an Ointment. Stread this upon a Linen Rag, and lay it warm to the Eyes.

Riverius orders this Collyrium to be taken off after two Hours, left it should by its Astringency so far contract the Vessels, as to fix the obstructed Fluids in them. Some Phylicians are of Opinion, that repellent and aftringent Collyriums should not be applied to inflamed Eyes immediately after the Inflammation appears; left the Fluids still in Motion should be fixed in the affected Part, and thereby the Obstruction be increased; but, except the Motion of the Fluids toward the inflamed Part be very violent, this Precaution is unnecessary; and, on the contrary, by increafing the Strength and Contraction of the Veffels, these Applications enable them to resist the Force of the Fluids; whilft at the fame time other proper Means are to be used to divert their Course another Way, fuch as Bleeding, Bliftering, Purging, Cupping, and the like. Befides, if we flay till the Quantity of the obstructed Fluid is very much increased, it is in vain to think of applying Astringents, which would ferve only to condense them more, and pre-

vent their being resolved. In scorbutick Disorders of the Gums, the following Wash is very proper:

Take of Campbire, an Ounce; Crystal Alum, two Ounces; Sugar-Candy, four Ounces; French Brandy, a Quart: Let them stand in a quiet Place for two Days, and then strain off the Liquor, and keep it for Use.

Alum is by fome reckoned a great Specifick in Intermitting Fevers, when prepared in this Manner:

First calcine it in an open Fire, and while it is still bot throw it into Vinegar, and let it dissolve; evaporate the Solution, and beautiful Crystals will be formed. It is to be taken from a Scruple to a Drachm, in a proper Vehicle, before the Fit.

The usual Preparations of Alum are, Purification, Distillation, and Ustion or Calcination. It is purified by being diffolved in fair Water, and then by evaporating and crystallizing that Solution in the common Manner. It is distilled like Vitriol, and the first thing that comes over is an infipid Phlegm, then an acid Spirit nearly the fame with Spirit of Vitriol. What remains in the Retort is a white. light, friable Substance, called Burnt Alum; being Alum deprived of its Phlegm, and some Portion of its Acid, and by a new Solution and Evaporation it will run into Crystals, as before Distillation. The Phlegm of Alum would be perfectly useless if pure. but as it contains always fome Portion of the Acid, and some Alum likewise, which sticks in the Neck of the Retort, it becomes a very useful external Application in Chirurgical Cases, for moderating Inflammations, and drying Ulcers. One Drachm of Alum diffolved in fix Ounces of this Phlegm, makes an Alum Water, which is an excellent Detergent for Wounds

Wounds and Ulcers. The Spirit of Alum is used the same way as Spirit of Vitriol. Burnt Alum eats away sungous Flesh, and is usefully sprinkled upon. Linnen to absorb bad Smells arising from any Part of the Body.

CHAP. V.

Of Sal Ammoniac.

HE Sal Ammoniac of the Antients was very different from what is now called by that Name. Salmasius, in his Treatise De Homonymiis Hyles Iatricæ, thinks that the antient Salt was the fame with Sal Gem; or, if it differed from it in any thing, it was only on account of the different Places where it was found, and in this respect the Sal Gem of one Country may now differ from that of another. Diascorides reckons it among the Kinds of common or alimentary Salt, and fays that it is fossil, dense, pellucid, white and fissile, the Fissures running in parallel Lines, in all which Properties it agrees with Sal Gem. Serapion writes, that Sal Ammoniac is made of hard pellucid Stones, which may very well be faid of Sal Gem. Avicenna fays, it is fiffile, diaphanous and crystalline. Pliny mentions this fossil pellucid Sal Ammoniac, and also gives an obscure Hint of another kind of it. In the Country of Cyrene, fays he, Sal Ammoniac is found under the Sands of the fame Colour with Alum, in long opake Glebes, of an unpleafant Smell, but useful in Phyfick. This Description might be applied to our Sal Ammoniac, were it not for the Words that immediately follow, which I am therefore inclined to think have been foifted in by some other ignorant

Hand. The best Sal Ammoniac, says the Text, is transparent, with streight Fissures. Whatever be in that, Pliny's Sal Ammoniac and ours differ likewife in this, that his was fosfil and native, ours is factitious. The antient Sal Ammoniac was fo called from that Part of Lybia, where the Temple of Jupiter Ammon stood, where it was found in greatest Plenty. We have now in the Shops a fort of native Sal Ammoniac, found in sulphurous Rocks about Puteoli in Italy; and may be found in all Places where fubterraneous Fires do often vomit Flame or Smoke; for the Heaps of Rocks or Stones at the Opening of these Caves are continually exposed to the faline Fumes, and after fome Days a white Soot, or faline Cruft, is found sticking to the Stones, which being carefully gathered is called Sal Ammoniac. This Soot is Sea-falt, or a fossile Salt, dissolved in Water, and fublimed by the fubterraneous Heat; and the watery Particles being evaporated, the faline are condensed, and stick in the Crannies or Chinks of the Stones, like a faline Flower, of a falt Tafte, foluble in Water, reducible to cubical Crystals, and feeming to differ in nothing from Sea-falt.

The common factitious Sal Ammoniac of the Shops, falfely called by fome Armoniac, is of two Kinds; one brought from India in conical Loaves, like Sugar, of an ash Colour; the other comes from Egypt and Syria, by the way of Marfeilles, in round state Cakes, convex on one Side, with a kind of Umbilicus in the Middle, and a little concave and rough on the other, being about six Inches in Breadth, and three or four Inches in Thickness; ash-coloured on the Outside, and white within, crystalline and streaked, of a pungent, acrid, salt Taste. Some relate that this Salt is produced from the Urine of Camels dried in the Lybian Sands, the fixed Salt being raised, or sublimed as it were, to the Surface by the heated Water of the Urine. But this Account is not con-

firmed

firmed by any credible Author. Others think this Salt is produced from the Urine of Camels or Cattle. which is first dried, then purified by frequent Lotions, and fo formed into Cakes. Others again believe that it is made of five Parts of human Urine. one Part of common Salt and Soot, boiled together till the Humidity is evaporated, that the rest is sublimed, then diffolved again, and fo coagulated. But the true way of preparing this Salt was never known till Father Sicard, a Jesuit, Missionary in Egypt, published an Account of the Original and Preparation thereof in the Memoirs of the Missions of the Fesuits in the Levant, printed at Paris in 1723. "Sal "Ammoniac, fays that Author, is made in feveral 66 Places of Egypt, but the best at Damaier in the Frovince called Delta. It is fublimed from a certain Soot, which is first thrown into large Glass " Vessels about a Foot and half in Diameter, with " a little Salt diluted with a small quantity of the "Urine of Camels or other Beafts of Burthen. Wenty or thirty of these Vessels, filled two thirds " full, are fet in Furnaces built for that Purpose, 46 and the Bellies of them covered with Bricks and 6 Clay. The Sal Ammoniac is fublimed into the " Neck of these Vessels, a blackish Mass remaining " at Bottom. Every kind of Soot is not proper for " this Purpole, but only that made from the Dung " of Animals, especially Camels, which is therefore " collected with great Care; for Wood being very " fearce in that Country, they make up this Dung " with Straw into Lumps or Cakes for Fewel, " having first dried them very well." Sal Ammoniac does not change the Tincture of

Heliotropium immediately, but, after a few Hours, gives it a dark red Colour. It does not coagulate Milk, nor any way affect the Solution of corrofive Sublimate. When mixed with Oil of Tartar, or Lime-water, it yields a penetrating Smell; but with

with Oil of Vitriol it raifes a violent Effervescence. and a very great Degree of Cold. When the Humidity is evaporated, this Salt concretes into pointed Crystals, representing in some measure little Tufts of Feathers. By Chemical Analysis we obtain from Sal Ammoniac two thirds of a volatile urinous Salt, and a fmall Portion of an acid Salt, very like the Spirit of Sea-falt. The urinous Salt, when dissolved, coagulates a Solution of corrofive Sublimate, and turns it white, turns the Tincture of Violets green, and raises an Effervescence and Heat with Acids: but, before it is diffolved, the Fermentation it makes with Spirit of Vinegar, and the common Spirits of Nitre and Vitriol, is accompanied with Cold. From hence it is plain that Sal Ammoniac is composed of an acid Salt, joined with an alcaline urinous Salt. but its chief Effects depend on the latter, which is in much greater quantity than the acid.

Sal Ammoniac is much used both by Chemists and Physicians. When given inwardly, it attenuates viscid Juices, and promotes Perspiration, Sweat, and Urine. It is recommended as a great Specifick in Intermitting Fevers, being given in the quantity of half a Drachm, mixed with a Scruple of prepared Crabs-Eyes, before the Fit. In Pleurisies, when Expectoration is indicated, a Scruple, or half a Drachm of Sal Ammoniac, mixed with Syrup of red Poppies, is ordered with Success. Externally, this Salt, by its little Spicula, penetrates the folid Fibres, and attenuates the pituitous viscid Fluids; and therefore, in Swellings of the Tonsils or Uvula, and in a Palfy of the Tongue, it is used as a Gargle, in

this Form:

Take of Florentine Iris Water, six Ounces; Pepper and Ginger, of each half a Drachm; Sal Ammoniac, a Drachm: Mix and make a Gargle.

Or, Take Elder Flower Water, fix Ounces; Spirit of Scurvygrass, an Ounce; Sal Ammoniac, balf a Drachm: Mix and make a Gargle.

To cure certain white Specks in the Eyes, the blue ophthalmic Water is made in this Manner:

Having poured any quantity of Lime Water into a brass Bason, dissolve Sal Ammoniac in it, and keep continually stirring the Liquor, till it becomes of a fine blue Colour.

This Salt is likewise used in Washes and Fomentations, to diffolve cedematous or gouty Tumors, and to consume the putrid Flesh of a Gangrene.

Sal Ammoniac is purified by Solution, fraining, drying, &c. as the other Salts; and likewife by Sublimation, in this Manner:

Take Sal Ammoniac, and common Salt, of each equal Parts; sublime them according to Art. The white Flowers that arise are termed the Flowers of Sal Ammoniac.

To obtain the volatile Salt, urinous Spirit, and acid Spirit of Sal Ammoniac, Take that Salt, and Salt of Tartar, of each equal Parts; sublime and distil them according to Art, in a Glass Alembic. The first thing that arises is a volatile urinous Salt, in a dry Form; next, the Spirit, or another Portion of the same Salt diluted in a small quantity of Phlegm. The saline Mass which remains at the Bottom, being dissolved in Water, and crystallized, is the febrifugal Salt of Sylvius, consisting of Salt of Tartar and Sea-falt. It is given, in the quantity of two Scruples, in the Beginning of the Paroxy/m, and sometimes it succeeds. This Salt, distilled with three times its quantity of Bole, yields

an acid Spirit, of the same Nature with Spirit of Sea-salt.

A most penetrating pungent Spirit of Sal Ammoniac is obtained by distilling it in a gentle Heat, with three times its Weight of Quick Lime. This Spirit, mixed with rectified Spirit of Wine, concretes into what is called the Offa Helmontii, which cannot be produced from Spirit of Sal Ammoniac made with the Salt of Tartar.

Sylvius's volatile oily Salt, fo highly efteemed by fome, is made of Sal Ammoniac and fome Spices,

in this Manner:

Take of Cardamums, an Ounce; Cinnamon, a Drachm and an half; Nutmeg, fix Drachms; Cloves and Cubebs, of each two Drachms; Salt of Tartar, an Ounce; Sal Ammoniac, four Ounces; Spirit of Wine, a Quart: Let them be macerated in a close stopped Glass Vessel for a Day, then distil them in an Alembic of Glass.

It may likewise be made extempore, thus:

Take volatile Spirit of Sal Ammoniac, and restified Spirit of Wine, of each four Ounces; Oil of Citron-Peel, and Mace, of each a Drachm; of Cinnamon, half a Drachm: Mix them together.

Sal Ammoniae, and its Spirit, because of their most penetrating Smell, when applied to the Nostrils, are used in that manner with Success in Lethargies, Apoplexies, Syncope, Giddiness, and the Hysterick Passion, to raise the drooping Senses, to stimulate the nervous Membranes, and to excite the animal Spirits. The Spirit is likewise proper for Rheumatick and Paralytick Disorders, being mixed with Oil of Earth-Worms, or any other Oil of that Kind, and applied to the Part affected as an Ointment.

ment. Internally taken, this Salt and Spirit promote a Diaphoresis, Sweating, and the Excretion of Urine, correct the acid Juices that lurk in the Body, help the Circulation of the Fluids, refresh the Spirits, and increase the oscillatory Motions of the Nerves, and thereby remove Obstructions. On these Accounts, the Spirit and volatile oily Salt are given from fix Drops to fixty, in Apoplexies, Epilepfies, Lethargy, in fleepy Affections, in hyfterical Complaints, and in Malignant Fevers. We ought, however, to be very cautious not to give the volatile Spirit of Sal Ammoniac, or any other fubtile penetrating Liquors of that Kind, in too great Quantities, especially without Mixture; left they should inflame the Membranes of the Œfophagus and Stomach, and burn like Causticks. The best way therefore is to dilute them with a large quantity of any fmall Liquid.

Sal Ammoniac is much used by the Chemists to volatilize fixed Bodies, to extract the Sulphurs of Metals, and other Minerals; and also to draw their Mercury from them, as they pretend. Hence they have given it various Names, fuch as the Heavenly Eagle, the Flying little Bird, the Solar Salt, the Mercurial Soot, the Mercurial Salt of the Philosophers, the Mineral Stone, the Key of Metals. Sal Ammoniac is used in preparing the Flowers of several Metals; fuch as Iron, Copper, Blood-stone, and others. of which in their proper Places. Aqua Regia, in which Gold is foluble, is made by mixing Sal Ammoniac with Spirit of Nitre. Besides this common Sal Ammoniac, the Chemists have contrived several other Sorts; fuch as that made by mixing the volatile Salt of Urine with Spirit of Nitre, of Vitriol, or of Vinegar; by which Ammoniacal Salts are produced, which eafily rife in Flowers, and are thereby fitted for the Volatilization and Attenuation of the

Parts of Metals.

CHAP. VI.

Of Chrysocolla and Borax.

NITRUM, Baurach, Baurachium, Borax, Tincar, Chrysocolla, are fynonymous Terms. The ancient Greeks used the Word Nizeo; the Arabians, Baurach: from whence the modern Greeks took their Bigat, and Bogazion; and the barbarous Latins, Borax; all these Terms signifying the Egyptian or African Nitre already mentioned. Tincar is an Arabic Word, fignifying one Species of Nitre which ferved to folder Gold, and from thence came the Term Chry-Mocolla of the modern Greeks, which by the Antients was used to express a Substance of a quite different Nature. Serapion writes, that Tincar was a kind of Salt, which was in Taste something like Borax, or Egyptian Nitre; and that there was a Species of Nitre, or Aphronitrum, of which Tincar was made. We must not therefore imagine that the modern Borax, or Chrysocolla, is the same with that of the antient Greeks, fuch as Diascorides and Galen. The antient Chrysocolla was a kind of Metallick Medicine, and they had two Sorts of it, Natural and Factitious. The Natural grows in Veins of Copper; and if ever it is found in the Mines of other Metals, it is a fure Sign that they are mixed with Copper. It is found fometimes like a loofe Sand, fometimes adhering to fome metalline Matter, from which, when it is feparated, it appears again in the Form of Dust or Sand. All this Natural Chrysocolla is of a green Colour, though not always in the fame Degree; for fome is of a very deep Green, like a Leek or Emerald, which is the least esteemed; some is of a fainter Green, and more valuable.

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This Chrysocolla is refined by different Washings, in this Manner:

It is put first of all into a Mortar, and Water poured upon it. As soon as it has settled to the Bottom, this Water is strained off, and fresh poured on, with which it is ground and rubbed with a Pestle, and these Lotions and Grinding are continued till the Water comes off clear. Afterwards it is dried in the Sun, and kept for use. If it be desired still finer, it is bruised and calcined over the Fire, and then washed as before.

Factitious Chrysocolla is of two Kinds; one called Herbacea, the other Santerina. The Chrysocolla Herbacea, according to Pliny, was made in this Manner:

Native Chrysocolla, first well bruised, calcined, and powdered very fine, is macerated in Vinegar, then pounded again, washed, and dried, and coloured with what he calls the Herba Lutea, whence the Painters who use it gave it the Name of Herbacea. It is likewise called Orobitis, either from the Colour of Vetches, or because it was made up in Grains resembling Vetches in Figure.

The Chrysocolla Santerna, according to Pliny, is made of Cyprian Verdegrease and the Urine of a healthy Child, with an Addition of Nitre, all which are beat together in Cyprian Mortars. Galen, following Diascorides, does not mention the Nitre, but informs us that this Kind of Chrysocolla is prepared in the Summer Time, or in a very warm Air; and that the Urine must be brought to the Consistence of Honey, before it is used. Diascorides ranks this Species among the Ærugines or Verdegreases. Pliny Kays

fays that it was used in Physick; and Galen, that it was used by the Goldsmiths for soldering Gold.

This is what we find in Pliny, Diafcorides, and Galen, concerning Chrysocella. We must, in the next place, examine, whether our Borax be any of the Kinds thereof above mentioned. There are two Kinds of Borax now in the Shops; one called Native, the other Native Borax refined. The Native Borax is brought to us in Pieces about the Size of a Hazel Nut or Walnut, of a dark green Colour, foul and earthy, and imeared over, as it were, with fome kind of Fat or Oil. It is dug up in feveral Places, but especially in the Empire of the Great Mogul, and in Persia. In these Countries, in feveral Mines, but especially in those of Copper, is found a faline turbid Water, of a greenish Colour, which is collected with great Care, and being evaporated to a proper Confistence, then being formed into a Paste with the Mud or Slime of the Springs from whence it arifes, and with the Fat of some Animals, it is laid in Pits dug in the Earth, and left there for feveral Months. Afterwards the Pits being opened, the Water is found concreted into Hairs or Threads. Thefe Threads, dug out of the Pits with the fat Earth about them, is the Native Borax of the Shops. The refined Borax are a Substance made up of clean white pellucid Threads, like Crystals of Alum, having a falt Taste, with fome Degree of Acrimony, foluble in Water; and is only the Former, or Native Borax, purified by a Lixivium of Quick Lime. We had it formerly from Venice, whence it was termed Venetian Borax, but now the refining of this Drug is almost entirely in the Hands of the Dutch.

It is evident therefore that the Officinal Borax is different from the Chrysocolla of the Antients; for that was a Species of native Verdegreafe, not foluble

in Water, and which, according to Diascorides excited vomiting, and fometimes proved poisonous. Our Borax is a Kind of Salt, foluble in Water, and never poisonous; but I cannot be positive whether it. be really different from the Borax or Tincar of the Arabians, because none of that is ever brought to Thus far we may be fure, that they do not both come from the fame Countries.

The Officinal Borax fwells and rifes in Bubbles in the Fire, like Alum, and afterwards melts quietly, and concretes again into a hard pellucid Mass, like Glass, still soluble in Water. By being exposed to the Air, it is in a manner calcined, and becomes opake. It yields nothing in Distillation but an infipid Phlegin, nor does it raife any Effervescence either with Acids or Alcalies, but quickly unites with Oil of Vitriol; and though they are both fixed, they form by their Union an infipid Volatile Salt. A Solution of Borax does not change the Tincture of Heliotropium, but turns Syrup of Violets green; when mixed with a Solution of Sal Ammoniac, it fends forth an urinous Smell; and it turns a Solution of Corrofive Sublimate, of a Saffron Colour. it follows that Borax is a fixed Alcaline Salt, something of the Nature of Salt of Tartar, but differing from it in this; that it fuffers acid Salts to be united with it, without any Tumult.

Borax has a two-fold Use, Mechanical and Medical. Goldsmiths use it to solder Gold, and facilitate the Fusion of Metals; and Dyers to give a Gloss to Silk Stuffs. Physicians use it to promote Delivery, to bring away dead Children and the Secundines, and to forward the suppressed Menses or Lochias The Dose is from half a Scruple to a Drachm.

an Emenagogue, it may be thus prescribed:

Take of Borax, a Scruple; Myrrh, twelve Grains; Oil of Cinnamon, one Drop; Saffron, three Grains:

Mix them, and make them into a Powder, to be taken either in a Glass of Wine, or in a sufficient quantity of Syrup of Mugwort, at the Time that the Menses are expected.

To bring away the Placenta,

Take Borax and Myrrh, of each fifteen Grains; Birthwort and Saffron, of each three Grains; Oil of Savine, two Drops; Syrup of the Five Opening Roots, a sufficient quantity to make a Bolus.

The Good Women having observed that Borax ferved to clean and give a Gloss to Silk, have imagined that it might be good likewise to clear the Skin, and for that reason it is frequently used in Cosmetick Washes and Pomatums.

Borax is an Ingredient in the Unguentum Citrinum, in the Powder for difficult Births of Charas, in the Balfamum egregium pro manibus, and in the Aqua Cosmetica Columbarum, of the same Author.

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SECT. V. Of Bituminous Juices.

Y Bituminous Juices we mean fuch Mineral Sustances as are inflammable, foluble in Oil, and which may be mixed therewith. These may be divided into Bitumens properly fo called, whether Liquid or Solid, into Sulphurs and Arfenic.

CHAP, I.

Of Liquid Bitumens.

I Iquid Bitumens are mineral Fluids, either of a thinner Confiftence, like Oil, called Naphtha, or Petroleum, or of a thicker Consistence, like Pitch. called Pissasphaltum, or Mineral Pitch.

ART. I. Of Naphtha, or Petroleum.

THE Naphtha of Diascorides, Petroleum of the Shops, is a fubtle, inflammable, mineral Oil, with a fragrant bituminous Smell, of different Colours, either white, yellow, red, or black. Different Names are given it by Authors. The Babylonians gave the Name of Naphtha to an Oil, either black or white, which flowed from fome Fountains near Babylon. It was likewife called the Oil of Medea, because she is faid to have burnt Creon's Daughter to Death by anointing her with this Oil. K 2

It had the Name of Petroleum, because it distils from Rocks. By Myrepsus it is termed Allicola; by others, the Oil of St. Barbarus the Abbat, the Oil of St. Catharine, or the Holy Oil. The Word Naphtha comes from a Greek Verb which signifies to

light, or kindle.

There are few Countries in which this Oil is not to be found. In the Island of Samos, a kind of it is gathered, called by the Inhabitants by a Name which fignifies Oleum Terræ; and it is in great Esteem among the Indians. In Italy, near Modena, this Oil is gathered from Springs and Wells; and indeed this whole Dutchy abounds with it, especially at a Place called Frumetto. The Inhabitants dig Wells to the Depth of thirty or forty Feet, till the oily Spring is found, and there it is always mixed with Water. The Wells dug at the Foot of the Hill furnish a large Quantity of very red Oil; those near the Top, a white Oil, but in fmaller Quantities. There is another Rock in the fame Country, near the Apennine Hills, where there is a perpetual Spring of Water, on which this Oil swims of a yellow Colour, and in fo great Quantities, that twice a Week they gather fix Pounds of it at a time. Petroleum is found likewise in France; and particularly in Britany, near Beriers, a red Oil mixed with Water flows from the Crannies of fome Rocks, which is collected with great Care, being no way inferior to the rest in Virtue. There is another such Fountain near Clermont in Auvergne.

Petroleum easily takes Fire, and it is the Custom in many Places to burn it in Lamps instead of common Oil. It is plentifully stored with fine volatile Parts, which easily evaporate, and are so greedy of Fire, that if a lighted Torch, or any other staming Body, be held in the Wells or Fountains of Petroleum, the exhaling Essure with Spirit of Wine. By Distillation

ftillation it yields an oily Liquor, fomething more pellucid than before; but it loses a great deal of its native Smell, and gives a more languid and less fuliginous Flame. A small Quantity of a yellowish Magma remains at the Bottom of the Alembic; and from all this it is evident that Petroleum is not at all bettered by Distillation. The best Petroleum is reckoned that which is fresh gathered, of a subtle bituminous Smell, white and pellucid; next to that is the yellow, then the red; but the black is counted the most impure of all.

Diascorides commends it in Suffusions and Dimness of the Eyes. The Petroleum of Britany is given, a few Drops at a time, with very great Success, in what is called a Suffocation of the Uterus, and to kill Worms in Children. It is proper in a Suppression of the Menses, taken in the quantity of twenty-five Drops, or the Region of the Pubes being anointed with it. In a Palfy accompanied with cold Pains in the nervous Parts, the Part affected is anointed with it. C. Lustanus commends the Use of it in stopping the Progress of a Schirrus, made up in the following Liniment:

Take Oil of Myrtle, and of Nutmegs, of each half an Ounce; the Fat of any Beast of Burthen, two Ounces; Petroleum, three Ounces: Mix them, together.

ART. II. Of Piffafphaltum.

THE Pissaphaltum of Diascorides, and of the Shops, or mineral Pitch, is a black or red kind of Bitumen, of a fragrant and not unpleasant bituminous Smell, viscid, or of a middle Consistence between Petroleum and a solid Bitumen, not unlike the common Pitch, susple by Fire, concrescible by Cold, and easily inflammable. It is compounded of two K 4 Greek

Greek Words which fignify Pitch and Bitumen, and the Compound might be rendered a Bituminous Pitch. or Pitchy Bitumen; the Reason of which Name is not that it confifts of an artificial Mixture of these two Substances, but that it fmells like fuch a Mixture. It distills from Rocks, or springs from the Earth in feveral Countries. That which was brought from Epidaurus is commended by Diascorides; and in Italy they use that which is found in the Campania di Roma, about fixty Miles from the City, near a little Town called Catho. It ouses through the Crannies of Rocks in the Summer time, of the Consistence of Honey, of a black Colour, and penetrating Smell. There is likewife a plentiful Spring of this Bitumen in Auvergne in France, which is foft and black, like Pitch, and of a bituminous Smell. If it be kept a great while, it grows hard, retaining still something of its fatty Confiftence, and never grows fo dry or hard as the folid Bitumens.

Fresh Pissasphaltum is digestive, maturating and resolvent. It is used in ripening Buboes, resolving Tumors, discussing Sciatick Pains, and to strengthen luxated Parts after they have been reduced. A Mixture of this, and slimy or muddy Clay, is called Maltha, and was used as Mortar in building the Walls of Babylon, according to Vitruvius.

CHAP. II.

Of Solid Bitumens.

Solid Bitumen is a hard friable Substance, suffible by Fire, easily inflammable, and which is condensed and dried by Cold. It is soluble in Oil, not in Water, and of different Colours. It is formed in the Bowels of the Earth; and while it remains soft, is carried along with the Waters, either into Springs or into the Sea, where it grows hard in a very little time. Other solid Bitumens are dug out of the Earth in that Form; and therefore though they were all once soft and sluid, they are divided into such as are collected from Water, such as the Bitumen Judaicum, and Ambergrease; and such as are dug out of the Earth, as yellow Amber, Jet, and Pitcoal.

ART. I. Of the Bitumen Judaicum.

THE Asphaltum of Diascorides, and Bitumen Judaicum of the Shops, called Carabe and Gummi Funerum by Serapion, and by others Mumia, is a folid, brittle, ponderous Substance of a red, blackish, or dark Colour; eafily inflammable, and of a strong bituminous Smell, especially when warm, and fusible by Fire. It is found in feveral Places; but the best is that which comes from Judea, where it is gathered on the dead Sea, called from thence the Lake Asphaltites. It is probable that a great Quantity of this Bitumen rifes from the Bottom of that Lake, to the Surface of the Water. At first it is soft, viscid and glutinous, that it can with Difficulty be separated from any Part which it touches; but in time it grows harder than Pitch, and from the Place where it is found.

found, it is called Carabe of Sodom, Carabe being used often by the Arabians to denote any solid Bitumen, and the Dead Sea being the Lake where Sodom stood. The Names of Gummi Funerum and Mumia were given it because the common People among the Egyptians used it in embalming and preserving dead Bodies.

The true Bitumen Judaicum is feldom brought to us; for Diascorides directs us to make choice of that which shines like Purple, and to reject the black kind as being foul, and of small Value; but all that we see of that kind is black; though even that, when broken in Pieces, appears against the Light to be of a Saffron Colour; and therefore it is possible this may be the same kind recommended by Diascorides, only boiled to a hard Consistence in Brass Kettles before it is sent to us.

It is of a discutient, emollient, and agglutinating Quality. It dissolves coagulated Blood, and promotes the Menstrual Discharge. It is an Ingredient in Venice Treacle, and in the embalming Powder of Charus.

ART. II. Of Ambergrease.

AMBER, called also Ambarum Cencraceum, and Ambra Grysea in the Shops, is a solid, sebaceous, or fat Substance, not ponderous, of an ash Colour, variegated like Marble, and marked often with white Specks. It flows out of the Earth in Form of a soft Bitumen into the Sea, where it hardens, and is found either floating on the Surface of the Water, or cast on the Shore. This Substance was unknown to the ancient Greeks; for no Author mentions it before Aetus; neither are the Words Ambar, or Ambarum, used by the modern Greeks and Arabians to signify yellow Amber, or Succinum, before Avicenna and Simeon Setbi. And from hence a great deal

deal of Confusion has arisen in the Application of

this Term by later Authors.

There are two Kinds of Ambergrease, the ash coloured and black. The first is to be preferred, when cleared of all Filth, with a strong Smell and light, and which, being pricked with a hot Needle, drops a fat odorous Juice. The black is less esteemed, as being mixed with Earth or Mud, or adulterated

according to fome.

Authors are not agreed about the Nature of Ambergreafe: Some take it to be the Dung or Fæces of Birds; fome, the Excrement of Whales; fome, a vegetable Refin; fome, a Species of Camphire; some, the Froth, or Scum, of the Sea concreted: And others think, that it is Wax or Honey mixed with the Salt of the Sea, and digefted and baked by the Heat of the Sun. But there is now no room left to doubt, but that it is a kind of Bitumen flowing from the Earth into the Sea, foft at first, but afterwards concreted and condenfed; for in the Middle of the Lumps, or Glebes of Ambergreafe, we find Stones, Shells, the Bones of Animals, the Beaks and Claws of Birds, Honey-combs filled with a ioft Wax, and other things of that fort, which could never have remained lodged in this Substance, had it not been once foft and likewife vifcid, like a Bitumen. The Glebes of Ambergrease are sometimes found so big as to weigh above two hundred Pounds. It is gathered in great Quantities about the Molucco Islands. in the Indian Sea, and is frequently found on the Shores both in the East-Indies, and in Africa. Pieces of it are likewise met with on the Northern Coasts of England, Scotland, Norway, and Ireland, being thrown ashore by the Tide.

Ambergrease melts by Fire into a Gold Colour'd or yellow Resin. It is easily inflammable, and is all soluble in Spirit of Wine, except a black, pitchy Matter, which the Spirit leaves untouched. When

this Solution has stood for some time, it lets fall a cloudy Sediment, which is by degrees inspissated and coagulated by the Evaporation of the fine Particles of the Spirit; and when this Coagulum is dried, it turns to a shining soliaceous Earth, not unlike Sperma Ceti.

In diffilling Ambergrease we get first an insipid, then an acid Liquor or Spirit, and a yellow Oil of a most penetrating Smell, with a small Portion of acid volatile Salt, like Salt of Amber, a black, shining, bituminous Matter remaining in the Retort. From whence it is plain that Ambergrease consists of sine volatile Parts, intangled in other thicker Parts, both saline and bituminous.

This Drug is very much used by Confectioners and Perfumers, in giving a fine Smell to their Preparations; and is recommended by Physicians as proper to raise the drooping Spirits, to supply the Defect thereof, and to accelerate their Motions. Hence it is both a cephalick and cordial Medicine, enlivens the Senses, and is very effectual in Faintings, and all other Affections of the Head and Nerves. It is thought to be very instrumental in prolonging Life, and in producing such Effects as are necessary for Generation. This Opinion prevails chiefly among the Eastern Nations.

It is used both outwardly and inwardly. The Dose in Substance is from one to four Grains, taken in a potched Egg, or in a Glass of Wine with Sugar and Spices. The Tincture extracted with Spirit of Wine is given from one to ten Drops. This Tincture is either Simple or Compound. The Simple Tincture is made by only dissolving the Ambergrease in Spirit of Wine, and then separating the Solution from the Fæces. The Compound Tincture is very

fragrant, and is prepared in this Manner:

Take Ambergrease and Sugar-Candy, of each two Drachms; Musk, twelve Grains; Civet, two Grains; Spirit of Wine, four Ounces: Digest them in a Glass Vessel for some Days, and then decant the Liquor, and keep it for Use. The Dose is from one Drop to eight or ten, taken in Spanish Wine, Cinnamon Water, or any other Liquor.

Riverius commends Ambergrease as a Strengthener of the Stomach, and as a Specifick in the Fames Canina; and he likewise orders it in Hypochondriacal Melancholy, after Purging, and a due Use of diluting Liquors, for reviving the native Heat, and exhilarating the Spirits. It is however to be observed that all Perfumes and ftrong Smells are hurtful to Hyfterical Women, and those in Child-bed; and the fame thing is remarked in many Hypochondriacal Men; for at this time few People can bear Perfumes or ftrong fragrant Smells, and for that Reafon, the Compositions used by former Physicians, in which Ambergrease was an Ingredient either alone or joined with Musk, are now almost quite laid aside. Sweet Smells, though offensive to hysterical Women, are, nevertheless, of great Service to them, applied by way of Fumigation to the Uterus. Ambergrease is an Ingredient in the Pulvis Diambræ of Mesue, the Pulvis Aromaticus Rosatus of Gabriel, the Pulvis Lætificans of Nicolaus Præpositus, the Pulvis contra Pestem or Bezoarticus of Renaudæus; in the Electuarium Diasatyrion of Charas, in the Tabellæ Magnanimitatis and ApopleEtick Balsam of that Author, and in the Confectio Alkermes & Hyacinthi, when they are compleat; for in these Compositions both the Ambergrease and Musk are often ordered to be left out.

ART. III. Of Amber.

AMBER, called by various Names by the Greek Writers, Succinum by the Latins, Karabe by the Arabians, Hambarum by the Barbarous Writers, and yellow or Citrine Amber in the Shops, is a bituminous, hard, dry, brittle, pellucid Substance, sometimes of a yellow, formetimes of a whitish, and formetimes of a dark Colour; of an acid bituminous Tafte, with a small Degree of Astringency, and when warm, of a fragrant bitumineus Tafte; inflammable, and indued with that Property called from thence Electricity. Diascorides has mentioned two Kinds of Electrum or Amber, one called Aspelozopov, because it attracts Feathers, named by others Lyncurium, from an Opinion that Amber was the Urine of the Lynx indurated to the Confiftence of a Stone; the other, from its Gold Colour, called Chrysophorum, which, he fays, was taken by fome for the Lacryma, or Exfudation of the Black Poplat; but he abfolutely rejects the other Origin, from the Urine of the Lynn. We may venture to affirm therefore, that the Origin of Amber was entirely unknown to Diascorides. It was called likewife Hyalas, from its Refembance to Glass in Splendor and Transparency; and Harpan, from its attractive Quality. The Latin Name, Suceinum, feems to have been given it from the prevailing Opinion that it was the Juice of some Tree. The Barbarous Name, Ambarum, is faid to be derived from two Arabick Words which fignify the Roman Poplar. Karabe comes either from a Persian Word which expresses its attractive Quality, or from an Arabick Word which fignifies a kind of Bitumen.

There have been various Opinions concerning the Origin of Amber. Diascorides, as we have already faid, was uncertain about it. Pliny writes that it is an Exsudation from a kind of Pine-Tree, which

grows in the Islands of the Northern Ocean, coridenfed by Cold; and falling into the Sea, is carried to the nearest Shores of the Continent, and there gathered. But at present there is no Doubt to be made but that it is a bituminous Mineral Juice, formed in the Bowels of the Earth, liquid at first, but afterwards concreted into a hard folid Substance; for in feveral Parts of France, especially in Provence, it is dug out of the Mountains, and likewise in Italy and Sicily: but all this is of the dark and least valuable Kind. The best is found in Prussia, where it is of two Kinds; one dug out of the Earth; the other found on the Sea-shore, which is of the fame Nature with the former. Hartmannus, who has wrote an accurate History of Amber, is of opinion that all Prussia and Pomerania stands upon a Bed of that Bitumen, because in digging Pits the Inhabitants always meet with great Quantities of Amber, fometimes at a very small Distance from the Surface of the Earth. The chief Amber Mines are near the Sea Coast of Prussia, and from the Shore where they are situated, an Hill arises, made up of a cortical Kind of Substance, and resembling Heaps of the Bark of Trees laid together. The exterior Strata are of an ash Colour, and dry; the interior are black, foft, and bituminous. Under these Strata is found a Substance like Wood, not composed of different Ranks of Fibres, contorted or woven together like vegetable Wood, but of different flat Laminæ laid upon one another, which may be called a fosfil Wood. This Substance Hartmannus believes to be the Matrix of Amber, because a great Quantity thereof is contained in the Veins of the Wood, and it is very feldom found without this Wood, And here I cannot but observe, that in other Places where Amber is found, this fossil Wood is likewise met with, as also the Lapis Lyncurius, and Mineral Native Vitriols. The Amber which is gathered on the

the Sea-shore comes from these succiniferous Hills beat to Pieces by the stormy Sea, and so carried along with the Waves, and afterwards thrown on the Shore.

Authors are not agreed which of the three Kinds of Amber, the Yellow, White, or Dark, is to be preferred for Phyfical Uses. The Yellow contains the greatest quantity of Oil, and by Rubbing gives a bituminous Smell, that is not unpleasant. The White has less Oil, and the Brown more Earth. Therefore when the volatile Salt is wanted, the White is to be preferred; when the Oil of Amber is defired, the Yellow ought to be made choice of; but the Brown is to be rejected, as most unfit for both.

Amber is foluble in Spirit of Wine, and likewife in Oleum Spice, Oil of Lavender, and of Linfeed & but with more Difficulty. In Diffillation, Amber yields a Phlegm, which is not infipid, but a little acid, and also mixed with some earthy Portion of Oil. Next to that we get a thick brownish Oil. A much greater Quantity of volatile Salt is obtained from White Amber than from Yellow. For from a Pound of the first we get four Drachms of Salt, whereas from the same quantity of the second we get hardly one Drachm. When the Distillation is overa black shining Caput Mortuum remains in the quantity of an Ounce for every Half Pound of Amber. The Salt of Amber being diffolved, and afterwards evaporated, does not crystallize, but runs into little Grains like Millet or Hail; but if it be sublimed in a Glass Vessel with a long Neck, it will be raised to the upper Part of the Veffel in white Flakes like Snow, armed with small short Spicula, of an acid and not unpleasant Taste, making no Effervescence with Spirit of Vitriol, but abforb'd by the volatile Spirit of Sal Ammoniac, or Oil of Tartar, with an hissing Noise, and the Appearance of many Bubbles. From

From these Trials we may conclude that Amber consists of a thicker kind of bituminous Fat, and of another fine subtile oily Part joined to a volatile Acid, such as exhales from lighted Sulphur, and in-

spissated thereby.

Many great Virtues are ascribed to Amber, especially when taken inwardly, in a cold State of the Brain, and in Catarrhs, in the Head-Ach, sleepy and convulsive Disorders, in a Suppression of the Menses, Hysterical and Hypochondriacal Affections, in a Gonorrhæa, Fluor Albus, and Hæmorrhages. The Dose is from a Scruple to a Drachm, in a potched Egg, or any other proper Vehicle:

Take, for Instance, of Amber finely powdered, or reduced to an Alcohol on a Porphyry, Conserve of Red Roses, and Rosemary Flowers, of each half a Drachm; Syrup of Stæchas, a sufficient quantity for a Bolus; to be taken in the Morning, to check the Flux of Rheum, and blunt its Acrimony in Colds in the Head, Catarrhs, and Running at the Nose.

Take prepared Amber, Campbire, and Dragon's Blood, of each a Drachm; Syrup of dried Roses; a sufficient Quantity to make an Opiate; of which the Quantity of a Drachm is to be taken every Morning in a Gonorrhæa, after due Preparation of the Body.

Take prepared Amber, and prepared Millepedes, of each two Drachms; Myrrh, half a Drachm; Conferve of the Flowers of white Dead Nettle, one Ounce and Half; Syrup of common Yarrow, a fufficient Quantity for an Opiate; to be taken in the quantity of two Drachms twice a Day in the Fluor Albus.

Take of prepared Amber, a Scruple; Sperma Ceti, and Terra Japonica, of each fifteen Grains; Syrup of Ground-ivy, or of Diacodium, a sufficient Quantity to make a Bolus, in a Spitting of Blood, or an habitual Cough proceeding from an acrid Phlegm.

Take of Amber, half a Drachm; Caftor and Myrrh, of each twelve Grains; Saffron, six Grains; Conserve of Wormwood or Extract of Rue, a fufficient Quantity to make a Bolus, in Hysterical Suffocations, and in a Suppression of the Menses.

Externally Amber is used as a Fumigation, in Cataplasms, and Cucuphæ, in Disorders of the Head or Brain. The Fumes of it, received at the Mouth, are often found fuccessful in beginning Quinfys, a Falling-down of the Uvula, or Swelling of the

Tonfils from a Catarrh.

The Preparations of Amber are, first, Prepared Amber, properly fo called; which confifts in reducing it to an impalpable Powder upon the Porphyry, and this Powder is much preferable to the Magistery of Amber. Secondly, the Tincture of Amber, with tartariz'd Spirit of Wine, which may be taken from a few Drops to a Drachm. With this Tincture is made the volatile oily fuccinated Salt; by mixing equal Parts thereof, and of the common volatile oily Salt, and then digefting them in a gentle Heat. This new Tincture is Cordial and Diaphoretick, and of furprizing Efficacy in fleepy Affections, Catarrhs, Hysterical Disorders, Palpitation of the Heart, Fainting, Obstructions of the Menses, and Palsies. The Dose is from a few Drops to a Drachm, in Tea, Wine, or any other convenient Liquor.

Externally, the Sutures of the Cranium, the Nares and Temples, are anointed with it in Catarrhs; the Scrobiculum Cordis, in Faintings, and Pal-

pitations,

pitations; and the umbilical Region in Hysterical Affections.

The Third Preparation from Amber, is a volatile acid Salt, a yellow Oil, and a black foetid Oil. The volatile Salt is diuretick, and esteemed a Specifick in hysterical, convulsive, and spasmodick Complaints, taken from ten Grains to half a Drachm; and with that is prepared the fuccinated Liquor of Hartshorn of Michael, very much recommended in the epileptick Fits of Children. This Liquor is made by diffolving as much Salt of Hartshorn and Salt of Amber in Spirit of Hartshorn as the Menstruum will take up. The Oil is useful in hysterical. cephalick, and nervous Complaints, taken inwardly, from two to twenty Drops. Externally, it is used in the Gout, Palfy, and Catarrh, by rubbing it into the Part affected; with it is prepared the fuccinated Balfam of Sulphur; and it is an Ingredient in the Emplastrum Magneticum of Angelus Sala.

Amber is an Ingredient in the Trochisci de Carabe, in Crato's Pilulæ de Succino, in Charas's Stomach Plaister, and in his diaphoretick and Styptick Plaisters, on to concentrate the state of Law, ome I

one particular Placed and shereby to make it more ART. IV. Of Fet, and Fossil Coal.

FET, or the Black Amber of the Shops, is a bi-I tuminous, dry, hard, black, fmooth, fhining Substance, which burns almost like Pitch, fending out a black thick Smoak, and a bituminous Smell. It had its Name, Gagates, from a Town in Lycia called Gage, or Gagis, and is now found among the Rocks in many Countries in Europe; fuch as the Province of Narbonne in France, in Germany, Saseden, Ireland, &c. It seems to me to differ from Fosfil Coal in the Purity and Fineness of its Parts; for Coal is more gross, and leaves a greater Quantity of earthy Parts after Calcination. It differs from

Bitumen

Bitumen in that it is not fusible by Fire, and is often observed to be covered with a kind of Vitriolick

Dust in the Places where it is found.

By Distillation, Jet affords a white and subacid Spirit, or Phlegm, then a black Oil, and next a butyraceous Substance, or thick gross Oil, leaving a black Caput Mortuum of a rare Texture, at the Bottom of the Vessel.

Diascorides attributes to Jet an emollient, discutient Virtue. In Fumigations, it is proper for a Suffocation of the Uterus; and Aetius writes, that Wine, in which burning Jet has been quenched, presently relieves those who are afflicted with the Heart-burn, and that it causes Sweat, and increases the Motion of the Blood. The Chemical Oil is proper to be

fmelled to in hyfterical Diforders.

To Jet may be referred the Fosfil Coal, concerning which Diascorides says he had been informed that the Fire made of it was increased by Water, and extinguished by Oil; the Truth of which we see every Day in Blacksmith's Forges, who sprinkle Water on their Coal Fires, to prevent the Dissipation of the Flame, and to concentrate the Heat, or confine it to one particular Place, and thereby to make it more intense. This Coal is of no Use in Physick, but an Oil may be extracted from it, resembling that of Jet in Nature and Virtues.

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CHAP. III.

Of Sulphur.

THE Sulphur of the Shops, called selow in Greek, because used in all Expiatory and other Sacred Rites, is a mineral, concreted Juice, solid, dry, friable, sussible by Fire, and very easily inflammable. The Flame it emits is blue, and the Smell of burning Sulphur is strong, subtile, acid, and very prejudicial to the Lungs.

Sulphur is of various Kinds; it is, in the first place, divided into antique or Native Sulphur, which has never been exposed to the Fire; and improvement, or Factitious Sulphur, prepared by Fire. It is either of a yellow, yellowish, ash, or light Colour, and either Pure or Impure in Substance.

Native Sulphur, termed Sulphur Vivum in Latin, is of two Kinds; one pellucid, and shining like Gold, and either of a citrine or greenish Colour. This is found about the Gold Mines in Peru, in Switzerland, and many other Places. The other is opake, found either in hard, solid, shining, greenish or yellow Lumps, or in Form of a clayish Glebe, of a light ash Colour, or yellow. This Kind is dug near all the Burning Mountains, near some sulphureous Springs, and in several other Places of Europe and America.

Factitious Sulphur is prepared in different Manners. In some Places it is obtained by boiling of Water, and at Buda in Hungary, according to Agricola, it is evaporated along with the Water of the Mineral Springs, and concretes in the Covering, or Dome of these Fountains, like Flower of Brimstone, and is gathered from thence, once every Year, with great Care. It is likewise extracted from a fort of ash-coloured argillaceous Earth. Thus in

fome Places of Italy there are Mines out of which a fat, white, argillaceous Earth is dug, mixed with fome blackish Veins; and this Earth being put into very capacious earthen Vessels, and distilled, the melted Sulphur runs out at the Rostrum of the Alembic into a Receiver, where it foon concretes into large Lumps. After the Distillation is over, a red Earth remains, which is thrown away, as useless. Sulphur is likewife often extracted from a kind of Pyrites, especially near Liege in the Low-Countries, where there is a kind of Pyrites like Lead Oar, which being dug up, is broken into small Pieces, and then thrown into very large Crucibles, or rather earthen Cucurbits of a quadrilateral Figure, with a narrow Orifice. These Vessels are placed in proper Furnaces, in an inclined Polition, whereby the Sulphur contained in these Stones, being melted by the Fire, runs into Leaden Vessels filled to a certain Height with Water, where it concretes immediately; the Substance which remains in the Cucurbit, containing a large Proportion of Vitriol. If by this first Operation, the Sulphur be not sufficiently pure and clean, it is melted a fecond time in Iron Veffels, and boiled with the Addition of a certain Quantity of Linfeed Oil. Afterwards it is made up, either in large Lumps, or is thrown into hollow Cylinders of Iron rubbed over with Oil on the Infide, and fo is formed into Rolls.

Sulphur fo prepared is called common Brimstone, or common Sulphur, and is of two Kinds, Yellow, or Greenish; which last is preferred for the Extraction of Oils or Sulphurs from other Bodies, as containing the greatest Quantity of Vitriolick Salt. Common Sulphur melts by Fire, is easily inflammable, emitting a fine blue Flame, with acid Essuvia, which, affecting the Nostrils and Lungs, excite Coughing; an electrical Quality is likewise observed in it. It is not soluble by Acids, but very readily by alcaline or oily

oily Substances. When fired in the open Air, it flies almost all away, a small Portion of a kind of Metallick Earth only remaining; but if the Vapour that afcends from burning Sulphur be collected with Care, it becomes an acid Liquor, of the same Na+ ture with Spirit of Vitriol, without any apparent Mixture of oily or bituminous Parts; but if Sulphur be distilled in an Alembic, or any other close Vessel, the Vapour does not then turn to a Substance of a different Kind, but concretes in Form of a yellow, footy Duft, called Flowers of Sulphur, which is of the fame Nature as it was before Distillation. Therefore, as Sulphur cannot be refolved into its different Principles in close Vessels, the Distillation of it remained very imperfect, till M. Homberg put the finishing Hand to it. His Method, as explained in the Memoirs of the Royal Academy of Sciences, for the Year 1703. is this:

Take of Flower of Brimstone, four Ounces; Oil of Turpentine, a Pound: Digest them in a Matrass over a Sand-Heat for eight Days, till the Sulphur is dissolved, the Liquor appearing of a dark red Colour. Then if the Solution be set in a cool Place, in a Vessel cooled by Art, about three fourth Parts will turn to yellowish Crystals, the other fourth Part remaining dissolved in the Liquor. The Crystals being separated from the Tineture, let a Pound of fresh Oil of Turpentine be poured upon them, and thus continue to repeat all the Parts of. the Operation till the Flower of Sulphur be quite dissolved. Mix all the Tinstures together, and distil them in a large Glass Retort over a gentle Fire; the greatest Part of the Oil of Turpentine will come over limpid, together with a small Portion of a whitish and very acid Liquor; but as soon as the Drops from the Neck of the Retort appear red, change the Receiver, and increase the L 4 Fire

Fire by Degrees, till nothing more will come over. Near the End of the Operation, a thick brownish Oil will appear, mixed with a small Portion of a whitish acid Liquor. In the Bottom of the Retort is found a black, rare, spungy Earth, or Caput Mortuum, in some measure foliaceous, Thining, insipid, and remaining fixed in the most vehement Degree of Fire. Let the thick, darkcoloured, and bituminous Oil, be put into another Glass Retort, and when the Remains of the Oil of Turpentine, and of the white acid Liquor, are all drawn off by a very gentle Heat, red Drops will begin to arise: Then immediately remove the Fire, and upon the bituminous Matter in the Retort pour restified Spirit of Wine, which being drawn off again in a gentle Heat, will have a very fætid Smell: Pour fresh Spirit on the Remainder, and continue this Process, till the Spirit that comes off has lost all its unpleasant Smell; and the Black Matter which then remains in the Retort -will smell agreeably enough, and is the true bituminous and inflammable Part of Sulphur.

It is here to be observed, that only a certain Portion of this bituminous Substance is dissolvible in Spirit of Wine, another Part remaining which is soluble neither by that Spirit, nor by any lixivial Liquor, but only by effential distilled vegetable Oils. This indissoluble Substance is a strong Cathartick given in the Quantity only of two or three Grains; but that Portion which yields to Spirit of Wine is an excellent Balfam for the Lungs.

By this Analysis, three very different Substances are obtained from Sulphur almost in equal Quantities; one acid, the second bituminous, and the third earthy and fixed. The acid Liquor is not different from Spirit of Vitriol, and when saturated with Salt of Taxtar, is formed into Crystals, exactly

like

like those of vitriolated Tartar. This Similitude of these two Liquors is farther confirmed by the artificial Production of Sulphur, either by reuniting the different Substances extracted from Sulphur, or by the Mixture of other Substances analogous to the former. Thus, if the white acid Liquor, or the Spirit of Sulphur, or Spirit of Vitriol, be mixed with the bituminous Portion of Sulphur, or with any other Bitumen, or Oil, or Fat; and these Mixtures be distilled with Salt of Tartar, a saline Mass will remain in the Retort, partly yellow, and partly red, from which common Brimstone may be obtained by Separation.

This Artificial Sulphur may be made in an eafier Manner, by Pouring upon Vitriol the fixed Salt of Vitriol, vitriolated Tartar, Sal Mirabilis Glauberi, Alum, or any other vitriolick Salt, melted in a Crucible, the distilled or expressed Oil of Vegetables, the Fat of Animals, any mineral Bitumen, or even Spirit of Wine, to the Point of Saturation; For soon after the Affusion of these iuflammable Liquors, a bluish Flame appears, and blue-cotoured Fumes are seen to arise in the Crucible. If at that Time the saline Mass be taken out of the Crucible, and dissolved in Water, and distilled Vinegar be poured on the Solution, the Liquor turns white, like Lac Sulphuris, and a greyish or yellowish Powder falls to the bottom, which is true genuine Sulphur.

Diascorides writes, that Sulphur is good in Coughs, when mixed with an Egg; and Hippocrates used it in hysterical Affections accompanied with Coughing, by way of Fumigation, sometimes alone, and sometimes mixed with other Substances. The internal Use of Sulphur is recommended by Physicians in Diseases of the Lungs, of which it is, by way of Emi-

Eminence, termed The Balfam; because it promotes Expectoration, and clears and strengthens that Organ; and is therefore very beneficial in a Phthisis, Asthma, and Catarrh. It has in all Ages been a famous Medicine in cutaneous Diseases, Scabs, Psoræ, &c. used inwardly or outwardly. Externally applied it discusses hard Tumours, ripens and digefts Buboes, but no Medicine prepared with Sulphur is thought to be agreeable to Women with Child, because it is apt to cause Abortion. Inwardly taken, it is laxative, and promotes infensible Perspiration, as may be perceived by the fulphureous Smell of fuch Perfons as have taken it, and by the brownish or black Colour which it gives to the Gold or Silver they carry about them. It is therefore very quickly and readily diffused through the whole Body, and by its balfamick Parts it blunts and intangles the acrid Salts, with which the Fluids abound in these Diseases; and thus resolves their native, mild, foft, and oily Qualities; by which Means it readily cures fmall Ulcers in the Lungs and Skin.

Though Sulphur may be given inwardly, even in a gross Powder, yet it is seldom ordered without some Preparation. It may be purified different Ways: Some put it into Water with melted Wax, which fwims at the Top while the Sulphur falls to the Bottom; and by repeating this Mixture till the Sulphur begins to acquire a red Colour, it is then thought to be more defecated. Some boil it in Water for feveral Days, changing the Water every now and then; and afterwards they fet it for two Hours in hot Smoak that some Fumes may exhale, and the remaining pale yellowish Sulphur they judge to be very pure. Others make Milks and Magisteries of Sulphur, which they think much preferable to common Sulphur; but all these Preparations either change the true Nature of Sulphur, or else are of no Effect at all. The best way to purify it is by Sublimation, or

the Reduction of it to Flower, by which common Method it is freed from the earthy or metallick Parts that may have been mixed with it.

Sulphur thus prepared may be ordered in the Difeafes already mentioned, in the following Manner:

Take Flower of Brimstone, four Ounces; Sugar of Roses, one Ounce; Syrup of Maiden-Hair, a sufficient Quantity to make a soft Opiate; of which three Drachms, or half an Ounce, are to be taken every Morning fasting, and every Evening, at the greatest Distance between Meals, for a long Continuance of Time, in the Scabies and Asthma.

Take Flower of Brimstone, an Ounce; white Sugar, four Ounces; Rose-Water, a sufficient Quantity: Boil them according to Art, and make them into Tablets or Lozenges; to be taken at a great Distance from Meals, in Coughs, Consumptions, and Asthmas.

Take Flower of Brimstone, two Drachms; mix it well in a potched Egg, and swallow it early in the Morning fasting, and repeat it again in the Evening, for the Itch, rubbing the Body with the following Ointment:

Take the Roots of wild sharp-pointed Dock, and Elecampane, of each two Ounces; fresh Butter, four Ounces; Flower of Brimstone, an Ounce and half. Mix them together, and make them into an Ointment.

As the powerful Acid contained in Sulphur is very prejudicial to the Lungs, Chemists, in order to make it a more safe, and equally efficacious Medicine, have endeavoured to mitigate or inviscate that acid Salt, by the Preparation called Balsam of Sulphur, for which,

which, on any Quantity of Flower of Brimstone, they pour as much Oil of any Kind as will fwim three or four Fingers Breadth above it, and then digeft them in a gentle Sand Heat, till the Oil begins to look red or brown. This Liquor, when cold, is feparated from the Fæces, and kept for Ufe. In this Manner are the different Balfams of Sulphur prepared; fuch as the Balfamum Anifatum, Faniculatum, Terebinthinatum, Juniperisatum, Succinatum, fo called from the different Oils made use of. The Dose is from ten Drops to thirty, in Asthmas, immoderate Coughs, Ulcers in the Lungs, Nephritick Pains, and Ulcers in the Kidneys and Bladder. From this Balfam are prepared the Balfamick Pills of Morton, which in fuch flow fcorbutick or fcrophulous Phthifes, are attended with a very fmall Fever, if any at all; and where the expectorated Matter is glutinous, as in an Asthma, are very beneficial, both in the Beginnings and fubfequent Stages of the Difease.

Take Powder of Millepedes, three Drachms; Gum Ammoniac, well purified, a Drachm and an half; Benjamin-Flowers, two Scruples; Extract of Saffron, and Baljam of Peru, of each ten Grains; Terebinthinate Baljam of Sulphur, a sufficient Quantity: Mix and make into Pills, which must either be gilt, or rolled in Powder of Liquoxish. The Dose is sisteen or eighteen Grains, to be repeated three times a Day, at Medical Hours.

But the best Balsam of Sulphur that has ever been prepared is undoubtedly that of the great M. Homberg, made by Extracting a Tincture with Spirit of Wine from the bituminous Part of Sulphur, freed from all its acid and earthy Parts. This Tincture, evaporated over a gentle Fire to the Confistence of a Syrup, is the genuine Balsam of Sulphur,

phur, and of excellent Use, not only in Diseases of the Lungs, but in all Disorders in which the animal Functions are disturbed by acrid Salts in the Fluids. It is taken, a few Drops at a time, in any Syrup, or licked from the Palm of the Hand.

Chemists extract the acid Salt of Sulphur from the bituminous Part, in Form of a Liquor, called Spirit of Sulphur; and among all the different Methods of doing this mentioned by M. Homberg, in the Memoirs of the Royal Academy for 1703, the following is the best.

Take of Citrine, or greenish Sulphur, ten or twelve Pounds; melt it in a large Crucible, or any other Earthen Pot, till it takes Fire; then set it on an inverted Crucible, in a broad Earthen Dish; and, having provided a large Receiver, with a wide Neck, about six Inches in Diameter, suspend it so as that it may receive within its Orifice the Crucible which contains the burning Sulphur. The acid Fumes of the Sulphur are thus collected by the Humidity of the Air in Drops which stick to the Sides of the Receiver, and from thence trickle down through the Orifice into the Earthen Dish. This acid Liquor is termed the Spirit or Oil of Sulphur.

Concerning this Operation, we must observe, 1. That two Crucibles ought always to be in Readiness, that, in case the Flame should be extinguished in one, the other, still burning, may be put in its Place. 2. The Crust which is always formed on the Surface of burning Sulphur, is to be taken off with Care, lest it should check the Flame too soon. 3. That the greatest Quantity of the acid Spirit is obtained in moist, rainy, cloudy, cold Weather. 4. That

in this Method of extracting it, more Spirit is obtained than by any other, a Pound of Sulphur some-

times yielding an Ounce and an Half.

This Spirit of Sulphur is proper in Burning, Malignant, and Pestilential Fevers. It quenches Thirst. prevents the Putrefaction of the Fluids, and calms the Effervescence of the Blood and Bile, not by coagulating the whole Mass of Fluids, as the other mineral acid Liquors, but only by intangling the fulphureous Parts; for, according to Borelli's Observation, a Drachm or two of Spirit of Sulphur injected into the Jugular Vein of a Dog, did not kill the Animal; but the same Quantity of Aqua Fortis, even diluted with Water, throws a Dog into terrible Convulfions, of which he foon dies; and upon opening his Body, the whole Blood contained in the Veins and Heart is found in grumous Clots. Moreover, Spirit of Sulphur attenuates groß viscid Humours, and thereby often removes Obstructions; whence it is recommended by fome in Afthmas; however, I do not think it proper for phthisical People, because, like other acid Liquors, it excites Coughing. It is given only in a few Drops at a time, fufficient to give a grateful Acidity to any proper Vehicle; and by repeating this Dose at the Beginning of every Paroxyfm, Intermitting Fevers are often cured by it.

Spirit of Sulphur, either by itself, or mixed with Honey of Roses, cures simple Aphthæ in a very small Time, provided there be no Instammation, by only touching these little Ulcers with the Spirit or Mixture, imbibed by a bit of Cotton or Linnen Rag. Riverius is of opinion, that it is an excellent Remedy in Putrid Fevers; and that it is found, by Experience, to cool, open, resist Putrefaction, prevent the Instammability of the Fluids, quench Thirst, &c. But it is never to be given in Pleurisies, Peripneumonies, Spitting of Blood, Phthisis, and other Diseases

of the Lungs, except the Obstruction arises from a thick, pituitous Matter, in Inflammations of the Stomach, Dysentery, Bloody Urine, and Ulcers of the Kidneys and Bladder.

CHAP. IV.

Of Arsenical Juices.

ARSENICAL Substances are nearly allied to Sulphur, and have likewife fome Affinity to Metals. They agree with Sulphur in being diffolved by Oil, in being eafily inflammable, and in emitting a fulphureous Smell while burning; though this Smell comes nearer to that of Garlick, and is very hurtful. Laftly, they agree with Sulphur in being eafily fublimed, or raifed into fine Flowers, without leaving any confiderable Quantity of the Metallick Part behind. These Substances likewise partake something of the Nature of Metals, especially of Mercury; for they either naturally do, or may be eafily made to, shine like Metals; they often leave a Metallick Part after Evaporation, and by the Fumes of them Copper may be turned white, in the fame Manner as by those of Quickfilver.

The Word Arfenick was taken by the Antients in a more extended Sense than by the Moderns. It was used by Diascorides for two different Substances, one of which is the same with our Orpiment, or Yellow Arsenick; the other was Red, resembling Sandaracha, but we do not know precisely what it was; for he distinguished it from Sandaracha, though at the same time he owns that in outward Appearance they differed only in the Degrees of Redness, which in what he calls Arsenick was deeper, and more like the

the Colour of Cinnabar. The Arabians mention only two Kinds of Arfenick; the Yellow, which is the fame with our Orpiment; and the Red, which they called also Realgar; but they confounded the Red Arfenick of Diascorides with the Sandaracha of that Author. It is however to be observed, that there is a great Difference between the Sandaracha of the Greeks, and of the Arabians. That of the Greeks was an arfenical, poisonous Substance; but that of the Arabians is the Gum of the Juniper Shrub, commonly called Varnish; and this Distinction is carefully to be rememberd in the Composition of Medicines.

The Moderns, taking Arfenick in a more limited Sense, understand by it only Auripigmentum, or Orpiment. The White and Red Arfenick they fometimes name Realgar, and the latter they likewise call Sandaracha. We shall divide Arsenical Substances into three Classes; the First taking in Orpiment; the Second Realgar; the Third Arfenick, properly for called.

ART. I. Of Orpiment.

THE Orpiment of the Shops, Auripigmentum in Latin, 'Adherich of Diascorides, 'Acorrindo of Galen, Naructh of Serapion, Zarnich Arfar of the Arabians, and Orpiment or Orpin in French, is an arsenical Juice, in squammous or foliaceous Glebes, like the Lapis Specularis; the Squamma, or Strata,

being eafily feparable from each other.

Orpiment is of three Kinds; one of a Gold Colour; the second of a deeper Red, or Cinnabarine Colour, mixed with Yellow; and the third, greenish and yellowish, mixed with a large Proportion of Earth, and therefore the least valuable. These three Kinds are found in the Veins of Gold, Silver, and Copper Mines; but we know not what was the

other Kind of Orpiment, mentioned by Dia-

scorides.

Orpiment is of an acrid Taste, soluble in Oil, and inflammable by Fire, emitting a thin Flame, with a great deal of Smoak, smelling strongly of Sulphur or Garlick. This Smoak, if coliected, turns to yellowish Flowers, like Sulphur, and a red, or blood-coloured Mass remains behind; which, when cold, concretes into a hard solid Regulus, like Cinnabar, called by some Red Orpiment, or Realgar. If the Orpiment be kept in a subliming Vessel for a long time on the Fire, the whole Mass is raised to the upper Part of the Vessel, and there concretes into a beautiful, red, pellucid Substance like a Ruby, only a small Quantity of Metallick Earth remaining at the Bottom. The first Fumes, which come from this Regulus, will turn Copper white and brittle.

Orpiment therefore must consist of the same Parts as common Sulphur, with some Mineral Particles mixed with them; or, it is composed of an acid Salt intangled in Particles of Mercury, and of a bituminous Substance. Its Corrosive Quality arises from the acid Spicula stuck into the Particles of Mercury; but it has that Quality in a less Degree than Corrosive Sublimate, because of its bituminous Part. It is less inflammable than Sulphur, because the Energy of the acid Salts contained in it is weakened by the Mineral Parts; and from its Corrosive Quality it is deservedly reckoned among the Poisons.

It was anciently used by Physicians to eat away fungous Flesh, but is now laid aside in that Intention, Chemistry having furnished us with much better Cathereticks. It is used sometimes by Barbers, with a Mixture of Quick Lime, as a Depilatory to eradicate the Hairs of any Part of the Body; but if they let it lie on too long, it corrodes the Skin. Some Physicians recommend the internal Use of Orpiment in Substance, in a purulent Phthisis accom-

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panied with Expectoration, and in Afthmas. The Fumes of it may likewise be received at the Mouth in the fame Intentions, and the Chinese reckon it among the Purgative Medicines. However, I cannot think the inward Use of this Medicine in any respect allowable; for it is a strong Poison, destructive to the Nerves, and accordingly is found by Experience to bring on very terrible Symptoms, fuch as Spasms in the Hands and Feet, Stupors and Contractions, Cold Sweats, Palpitations of the Heart. Faintings, Thirst, inward Burning, Vomiting, Belly-Ach, Erofions, violent Pains, and Death itself, according to the different Doses of this Poison; and in the Bodies of fuch as die in this Manner, the Oefophagus, Stomach, and Intestines are found to be inflamed, corroded, and perforated in feveral Places.

The Antidotes for Orpiment, and all other Arfenical Substances, are whatever is able to blunt the Acrimony of these corrosive Medicines; such as Milk and Oil drank in great Quantities, fat Broths, the Juice of Mallows, or Marsh-Mallows, Decoctions of Flea-wort, and Linseed, Marsh-Mallow Roots, and such like. Orpiment or Arsenick worn about the Neck like an Amulet, cannot be so hurtful as some imagine, neither do we believe it of any Virtue in preserving against the Plague or pestilential Diseases.

Of the Livivium of Orpiment and Quick Lime is made the Sympathetick Ink, by the Effluvia of which alone, Letters wrote with Vinegar of Lead become visible; and the Painters use it for Gold Colours, from which Use its Name is derived.

ART. II. Of Realgar.

REALGAR, or Lisagallum of the Shops, Say Sagayn of the Greeks, Realgar, Lefegal, and Zarnich Abmer of the Arabians, called by us Red Orpiment, is an Arfenical Juice, of the fame Nature with Orpiment, differing from it only in Colour. It is of two Kinds, Native and Factitious. The Native Realgar is dug out of the same Mines with Orpiment, being of a cinnabarine Colour, and fmelling like Sulphur and Garlick when burnt, and made up in folid brittle Glebes. The Factitious Kind is made of Orpiment melted and boiled for fome Time in fubliming Veffels, by which the Yellow Flowers are raised to the upper Part of the Veffels, and the Mass remaining at the Bottom, being condensed by Cold, becomes of a red Colour, like Cinnabar, and is called Realgar; which, if it be exposed to the free Air for a long Time, becomes covered with a faline Efflorescence. This Realgar is not to be confounded with the Factitious red Arfenick, of which we shall treat in the following Chapter.

Realgar is brought from China in different Figures; fome of which refemble the Figures of little Men, called Pagods, and I am of opinion that it is not cut

into these Figures, but cast in Moulds.

Realgar is no lefs poisonous than Orpiment. According to Diascorides, Sandaracha has a septick and corroding Virtue; but it is wonderful, that he should recommend the Use of it not only in Fumigations for Coughs of long standing, but also taken inwardly, mixed with Resin for Ashmas, with Honey for a Hoarseness, or a spitting up of a purulent Matter. Even Hippocrates, in a Suffocation of the Uterus, accompanied with a Cough, orders the Weight of an Obolus, or about twelve Grains, of Sandaracha, mixed with the same Quantity of unprepared Sulphur, and

and three or four blanched Almonds, to be taken in fweet or perfumed Wine. The Indians commonly drink Wine or Water out of Arfenical Cups for various Diseases, as a sovereign Remedy; though among us, this Practice has been found to be attended with very bad Confequences. It must be owned therefore that the Bodies of Men in hot Countries are different from ours. As the infensible Perspiration is there more copious, their folid Fibres are drier, and more unfit for Motion, and for that Reafon require more strongly irritating and stimulating Medicines to make these Fibres contract as they ought, Likewife, as the Fluids in their Bodies are thicker and more viscid than in ours, by the Evaporation of the more fluid Parts of them, they cannot be attenuated but by strong and very acid Medicines; and therefore what is a certain Poifon to us, is to them an efficacious Remedy; as the Cathartick Medicines which we use have hardly any Effect on them, except they be given in three times the common Quantity, as has been often observed by Physicians. In our Climate therefore we ought to abstain from the inward Use of these Medicines however prepared, corrected or mitigated, because they still retain some Part of their deleterious Qualities, and prove fatal in tender Constitutions of the Viscera. Neither is the external Use of them altogether safe, for Fernelius relates that by applying a large Quantity of Arfenick to a cancered Breast, the Patient was carried off in fix Days. About three Hours after the Medicine was applied, the was feized with a Shivering, Vomiting, Pain in her Head, and frequent Fainting. Her Pulse was weak, and as the Symptoms increased by Degrees, she began to be cold in the Extremities of her Body, and then her Face and other Parts fwelling beyond measure, she soon died. From this Observation, Fernelius takes Occasion to caution Physicians against the External Use of Arsenical Medicines.

Medicines, except in small Quantities, and to Parts at a great Distance from the Heart and Brain, though in the Opinion of many very great Physicians they are thought to be very powerful and efficacious Remedies in cachectick, phagedenic, and carcinomatous Ulcers.

The Correction of Realgar, first proposed by Helmont, and afterwards published by Dallicot, first Physician to the Duke of Lorrain, which has been

found fuccessful in many Cases, is this:

Put any Quantity of Realgar, finely powdered, into a Glass Matrass, and pour upon it as much of a strong Lixivium of Tartar and Nitre as will swim four Fingers breadth above the Realgar. them in a Sand-beat for twenty-four Hours, shaking the Matrass very often. Then pouring off and preserving the Tineture, pour new Lixivium upon the Powder, and repeat the whole Operation, till almost all the Realgar is dissolved, some indisfoluble metallick Parts only remaining. Afterwards mix all the Tinctures together, pass them through Cap Paper, and pour at several times as much Vinegar of Lead to the strained Liquor, as will precipitate all that can be separated from it. Then, pouring off the clear Liquor from the Precipitate by Inclination, let the Powder be washed with warm Water till it become almost insipid, and when it is well dried, burn a sufficient Quantity of restified Spirit of Wine upon it, and then calcine it with the Tineture of Opium extracted with Spirit of Wine. This Powder so prepared is a gentle Escharotick, of great Service in cancerous Swellings.

ART. III. Of Arfenick, properly so called.

ARSENICK properly fo called, is a Subftance extracted from an Oar found in Saxony and Bohemia, named Cobalt. It is of three Kinds, Crystalline, Yellow, and Red; and as this Original of Arsenick, and the Way of preparing it, are not commonly known, I shall here shew what is the Nature of Cobalt, and in what manner Arsenick and the other Substances found with it in the Oar, are extracted, also what are the Kinds of Factitious or Artificial Arsenick.

German Cobalt of the Shops, Cadmia Metallica of Agricola, is a ponderous, hard, fossil Substance, almost black, not unlike Antimony or some Kinds of Pyrites, emitting a strong sulphureous Smell when burnt, often mixed with Copper, fometimes with Silver. It is dug out of Mines in Saxony, near Goslar; in Bohemia, in the Valley of Joachim; and in England. in the Mendip Hills, in great Quantities. It has fo strong a Corrofive Quality as sometimes to burn and ulcerate the Hands and Feet of the Miners, and is a deadly Poison for all known Animals. All the three Kinds of Arfenick are extracted from it, and it likewise serves to make Zaffera, used by Potters in giving a blue Colour to their Veffels; and the Encoustum Caruleum, or that Kind of Blue fometimes used by Painters, and often by Women to mix with Starch for whitening and stiffening Linen. The way of making all these, is taught by Runkelius in his Art of making Glass. To this Purpose they put the Cobalt in a calcining reverberating Furnace, made for that Purpose in such a manner as that the Flame may just graze upon the Oar, and so set it on Fire. The Flame of the Oar is blue, accompanied with a copious Smoak which is received on the Ceiling of the Furnace, and from thence conveyed

out through a large Funnel made of Boards, and above a hundred Ells in Length, but the greatest Part of it sticks to the Inside of the Funnel, in Form of a whitish Soot; and every six Months the Labourers sweep the Funnel with Brooms, and carefully preserve this Soot, which afterwards serves to make both Crystalline, Yellow, and Red Arsenick.

Crystalline Arsenick is made only by sublimating the Soot in Iron Vessels into an opake Substance, sometimes white and shining like the Encaustum Album, sometimes streaked with Red and Crystal-

line Veins.

Yellow Arfenick is made of the fame Soot fublimed with common Sulphur, in the Proportion of one Part of Sulphur to ten of Soot. The fublimed Mass is of a yellow Colour folid like Sulphur, shining, and not altogether opake, easily broken, but not friable, or easily crumbled into Dust; and distinguishable from Orpiment by not taking Fire when thrown upon burning Coals, as Orpiment presently is.

Red Arfenick is made of the same Soot and Sulphur, mixed with a small Proportion of a Metallick Substance called the *Spuma* of Copper. The substance Colour, and Imed Mass is solid, of a Cinnabarine Colour, and

opake.

The calcined Cobalt, after the Evaporation of the Fumes or Smoak, is powdered and calcined again; and this Operation repeated till the Calcination is judged to be perfect. Then being very finely powdered, it is mixed with two or three times the Quantity of powdered Flint Stones, and moistened with a little Water in large Tubs, where, in a very short time, it becomes a folid firm Mass, called Zaffera, as already said, which is used by the Potters, Glass-Men, Enamelers, &c.

If two Parts of calcined Cobalt, one Part of Pot-Ash, and three of common Sand, be melted together, a vitreous, opake, bluish Mass is produced, which is ground in Mills to a very fine blue Powder, which is called Smaltum, or Encaustum Cæruleum, used by Painters, and in washing Linnen.

Arfenick confifts of an acid Salt, and a kind of Mercurial or Metallick Substance, which discovers itself when it is distilled in a Retort, mixed with Soap, Suet, Oil, or any fat or oily Substance; for with a strong Degree of Fire the Ar mick will be raised into the Neck of the Retort in a Metallick Form, like Antimony. The Sulphur contained in Arfenick is in so small a Proportion, that it does not flame when cast on burning Coals, though Cobalt contains a great Quantity of Sulphur; which confequently has been separated from the Arsenical Parts in the Calcination and Deflagration, and fo evaporated; but the Smell of Arfenick proves that some Sulphur still remains in it. Arsenick is very volatile, for if any Quantity of it is put into a Crucible, and fet over the Fire, it will presently evaporate in white Fumes, without leaving any Remainder. If melted, stratified, or cemented with Copper, it turns it of a Silver Colour; but as it impairs its Ductility, this Change of Colour is rendered of no Use.

Arfenick is a powerful Corrofive, and reckoned among the strongest Poisons. When taken inwardly, it causes many bad Symptoms, of which some are common to it with other Poisons; such as Anxieties, Swoonings, Palpitations, a sudden Dejection or Sinking of the Strength and Spirits, Stupors, Deliriums, convulsive Motions of the Limbs, Palsies, Heat and Corrosion of the Fauces, Thirst, Fevers, Vomiting, Pain in the Stomach, cold Sweats, &c. Other

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Symptoms are peculiar to this Poison; such as not only an Erofion of the Stomach, but an Extenuation of it, in fuch a manner as that all its Coats taken together shall not be thicker than a Poppy Leaf in many Places, and at the fame time the fmall Intestines are found corroded and perforated; a sudden Swelling and Sphacelation of the Parts of the Body : and after Death a more speedy Putrefaction than is observed in other Cases, especially in the Parts of Generation belonging to Men. If Death does not immediately follow, the Patient becomes afflicted with an Hectick Fever, Marasmus, Palsy, Tremors, and fometimes Madnefs. Some recommend Rock Crystal reduced to an impalpable Powder, as an Antidote against Arsenick, but I should depend much more on drinking large Quantities of Milk, Oil, or fat Broths, while the Poison remains in the Primæ Viæ; but after it has got into the Blood, alexiterious Medicines are to be used, such as Venice Treacle, Mithridate, Bezoar, Powder of Vipers. Contrayerva Root, and fuch like, and afterwards a Milk-Diet.

Though Arfenick be a quick Poison for both Men and Brutes, it is recommended by some in Intermitting Fevers; but, let it be never so much prepared and concreted, its deleterious Qualities are only lessend, never wholly removed; and therefore though it may be a good Remedy for the present, it will afterwards prove a Poison, and bring on very dismal Symptoms. Arsenick therefore, in my Opinion, is worse than the Fever itself; and, among all the Preparations thereof, there is but one which I can recommend, even to be used externally.

Take crude Antimony, yellow Sulpbur, and Crystalline Arsenick, of each two Ounces; powder and mix them well in a Glass Crucible, and melt them

in a gentle Sand-heat, till they come to the Confiftence of Pitch, and the Fire being removed, they will concrete into a Mass of a dark red Colour, which is to be kept for Use.

This Medicine is only to be applied externally, as being a mild and gentle Caustick, and thought to be indued with a Power of attracting poisonous or other morbifick Matter from the Centre of the Body to the Surface, like a Loadstone; and hence it has the Name of the Arsenical Magnet. It is likewise faid to be a powerful Ripener, and is therefore applied to Venereal Buboes, with the Emplastrum Diachylon magnum. It is an Ingredient in the Emplastrum Magneticum of Angelus Sala, and recommended for maturating and breaking Venereal Buboes, and is thought to draw the Pestilential Virus out of them. It is likewise proper in scrophulous Ulcers, which it opens, cleanses, and incarns, without the Assistance of any other Ointment.



S E C T. VI. Of Metallick Fossils.

By Metallick Fossils, I understand Mineral Substances which have a great Affinity with true Metals, but which differ from them in this, that they are neither ductile nor malleable, but brittle, friable, or sluid. Some of these Substances contain a certain Portion of true Metal: such as the Bloodstone, Smiris, Loadstone, Magnesia, and Calmine, which are mixed with Iron; and Chalcitis, which contains some Quantity of Copper. Others cannot be reduced to any Metal, but are Substances of a peculiar Nature, which may be termed Spurious Metals, or Semi-Metals. Of this Kind are Antimony, Bismuth, Zinch, and that Metallick Fluid which from its Colour is termed Hydrargyrum, or Quicksilver.

CHAP. I.

Of Metallick Fossils which contain Parts of some true Metal.

ART. I. Of the Lapis Hamatitis, or Bloodstone.

LAPIS Hamatitis, allos ainalines of the Greeks, Sedenegi and Sadanegi of the Arabians, is a ferruginous, hard, glebous, ponderous Metallick Subfance,

france, of a dark red or yellowish Colour, and sometimes blackish, or of the Colour of Iron, and of an earthy astringent Taste. Being broken, it shews sine, long, sharp Fibres, like those of Wood. It was called Hæmatites in Greek, from its Colour, or because it is indued with the Virtue of stopping Blood.

Pliny distinguishes five Kinds of Bloodstone, according to the Countries where they are found, and their differing Colour and Hardness. Others divide them according to their different outward Appearance. Some Stones have an uneven and angular Surface, as those that come from Spain; some are clustered on the Surface, like Bunches of Grapes, from whence they are termed Hæmatites Botryodes, as we see in those brought from the Hercynian Forest in Germany. Others are formed in various Convolutions, like Intestines, or the Outer Surface of the Brain; and these Surfaces are very beautifully delineated by Altrovandus and Imperati.

In Iron Mines, the Bloodstone is often found in a distinct Oar; but where-ever it is found, or wherever it grows, there are always red Stones and red Earth near it. It is likewife found fometimes in the fame Places with the Loadstone, and indeed there is a great Affinity between these two, as being both justly reckoned Iron Oars. The Bloodstone is dug up in many Places of Germany, in Italy, and Spain, and this last is reckoned the best. That Bloodstone is to be made choice of, which is hardest and smoothest, without any Mixture of Filth, or Veins; and this Stone is carefully to be diffinguished from another fomething like it in Colour, but fofter, which Painters and Joiners make use of, called by Mistake in some Books Hamatitis, but its true Name is Rubrica Fabrilis, or Ruddle.

Bloodstone is a kind of Iron Oar, from which Iron may be extracted; and in the Valley of *Joachim* in *Bohemia*, the Mines of these Stones are so rich, that

it is thought worth while to extract the Iron from them, which is likewise excellent in its Kind, as Agricola relates. This Stone is distolved by Acids in the same manner as Iron, and with the Vitriolick

Acid is turned into green Vitriol.

Both Diafcorides and Galen used Bloodstone in Roughnesses or Cicatrices of the Eye-Lids; and for this Purpose they first rubbed it upon a Whetstone with Water, a Decoction of Fænugreek Seeds, or the White of an Egg; and they commend it when diluted with Milk in Suffusions of the Eyes. In all Ages it has been used in a fine Powder, from one to four Scruples in any proper Vehicle, for all Kinds of Hæmorrhages, in Spitting Blood, and in Ulcers of the Lungs, which it dries and heals. In the Fluor Albus, Cachexia, and Suppression of the Menses, it is found to be as effectual as the Crocus Martis Aperiens.

The Chemical Preparations of the Bloodstone are not altogether to be despised; such as its Ammoniacal Flowers, Urinous Spirit, Aperient Tincture, Styptick Liquor, Acid Spirit, and Crocus; all

which are thus prepared:

Take of the finest Powder of Bloodstone, two Pounds; powdered Sal Ammoniac, a Pound: Mix them well, and put them in an Earthen Cucurbit with a Glass Alembick, and proper Receiver fitted to it. Then sublime them in an open Fire, gradually increased. The first Substance that rises is an Ammoniacal Spirit, tintstured with something of a yellowish Cast; afterwards come Citrine Flowers, then Flowers of a Saffron Colour. The Mass that remains in the Cucurbit being put into a Retort, and distilled with a great Degree of Fire, will yield an Acid Spirit, not unlike that of Sea-salt. If the Residuum be exposed to the open Air, it will dissolve into a Gold-coloured styptick Liquor,

of great Use. But if the Residuum be calcined in a strong Reverberatory Heat, it will turn to a Crocus, of the same Virtues with the Crocus Martis Astringens.

From the above-mentioned faffron-coloured Flowers. a Tincture may be extracted with Spirit of Wine. which some Chemical Physicians prefer to the Tin-Eture of Gold, and therefore term it the Elixir of the Tree of Life! The Ammoniacal volatile Spirit has the fame Virtues with the volatile Spirit of Sal Ammonfac; and is even more proper to refolve Obstructions; because of the Martial Parts contained in it. Both the Flowers contain the volatile fine Martial Parts of the Bloodstone, raised by the Sal Ammoniac, and as the faffron-coloured Flowers contain more fuch Parts than the Citrine, they are most efteemed. They fmell fomething like Saffron, and are therefore by Paracelfus termed Aropb, which is the fame with Aroma Philosophorum. They open Obstructions, attenuate gross viscid Humours, and very often carry them off by Stool or Urine. The Dose is from three Grains to a Scruple; which if it exceeds, they fometimes cause Vomiting. They are ordered with very great Success in a Suppression of the Menses, Cachexia, Obstructions in the Viscera, flubborn Fevers, and Quartan Agues. They are by some preferred to the Flores Martiales, because in this Oar the Metallick Parts are of a more rare Texture, and the feveral Principles cohere lefs than in Iron itself, and consequently they are more easily diffolved by the Sal Ammoniac. These Flowers may be ordered in this Manner:

Take of the Flowers of the Bloodstone, twelve Grains; Saffron and Myrrh, of each five Grains; Extract of Wormwood, a sufficient Quantity for a Bolus, to be taken in the Morning, in a Suppression of the Menses.

Take Arum Root and White Agarick, of each an Ounce; Gum Ammoniac, balf an Ounce; Flowers of Bloodstone, a Drachm; Extract of Aloes, of Cinnamon, and of Saffron, of each two Drachms; Syrup of Fumitory a sufficient Quantity to make an Opiate, of which any Quantity between a Scruple and a Drachm is to be taken in Obstru-Etions of the Viscera, Jaundice, Schirrbus, Dropsy, and Cachettick Affections.

Take Peruvian Bark, an Ounce; Flowers of Bloodstone, a Drachm; Syrup of Wormwood, a sufficient Quantity to make a soft Opiate, two Drachms of which are to be taken every four Hours, in Quartan Agues, and in all Aubborn Intermitting Fevers.

Instead of the Flowers; the Tincture may be used, which has the fame Virtues, and may likewise be used with more Safety in Hæmorrhages, from ten to thirty Drops in any proper Vehicle. The ftyptick Liquor obtained by diffolving the Caput Mortuum, or Residuum, after Distillation in the Air, is of very great Efficacy in stopping all Kinds of Hæmorrhages, either externally applied, or taken inwardly, in the Quantity of between five and twenty Drops. It likewife cures the Fluor Albus, Gleets, and Loofenesses, whether with or without bloody Stools, where the Patient's Body has been duly prepared. Laftly, whatever Efficacy is in the Crocus Martis Astringens, may be found in the Caput Mortuum of the Bloodstone.

The Bloodstone is an Ingredient in the Dysenterick Powder of Charas, in the Powder against Hæmorrhages

rhages and Hernias, and in the styptick Plaister of that Author.

ART. II. Of Smyris, Loadstone, Magnesia, and Petracorium.

SMYRIS, Smyrillus, or Emery of the Shops, our bagedi of the Arabians, is a ferruginous, heavy, Metallick Substance, of a Colour inclining to Black, and so hard that Lapidaries use it in cutting and polishing their Diamonds, and Smiths to polish their Iron and Steel.

Emery is of three Kinds. The Common, which is blackish, and very much used, is found in many Parts of Europe, especially in an Island on the Coast of Tuscany, and in Guernsey in the British Channel. The Second is a hard, uneven fort, of a reddish Colour, like Bloodstone or Oker, but does not fain the Hands. This is by fome reckoned among the Bloodstones. The Third is of a blackish red Colour, streaked with gold-coloured Veins. It is found in the Gold Mines of Peru, and really contains Gold. This Kind is thought by Chemists to be a Gold Oar, or rather a fort of immature or imperfect Gold, and therefore they efteem it very much, and extract a Tincture from it with Spirit of Sea-falt, with which they fix Mercury in an Instant, and give this Substance the Name of the Miraculous Precipi-, tate, because they fancy they shall at length attain the true Art of making Gold by Means thereof.

Emery is recommended by Diascorides and Galen as a Dentifrice; but it corrodes the Teeth too much, and infenfibly wears them away. It is not now of

any other Use in Physick.

Magnes, or the Loadstone of the Shops, Heganing As-

Heraclea, a Town in Lydia, Magvirus, from Magnesia, another Town in Lydia, Sidneiths, from its attracting Iron, Magnatis of Avicenna, and Calamita of Rhases, is a ferrugnious, dense, fossil Substance, of a blackish, bluish, or reddish Colour, attracting Iron or another Magnet, or repelling them, and directing its Poles always to those of the World where it is at Liberty to move. This Substance is not to be confounded with the Magnes of Theophrastus, which, he fays, was white and shining like Silver, not hard, but easily made into Vessels by the Turner's Art; neither did it attract Iron. It was however named from the same Magnesia in Lydia. Another Name of the Loadstone is Lapis Lydius, which is likewise applied to what we call the Touchstone, by which the Truth of Gold and Silver are tried. These two Significations of Lapis Lydius are therefore carefully to be diffinguished, because they are very different from each other, though they are both from their common Country.

Some of the antient Greeks, having observed the Virtue of the Magnet in repelling Iron, believed there were two Kinds of it, different from each other, one that attracted Iron, the other that re-

pelled it.

The Loadstone is found in many Countries of Europe, and for the most part in Iron Mines; but the best are those that come from the East Indies and Ethiopia. It is undoubtedly a kind of Iron Oar, and in some Places in Germany they actually extract the Iron it contains; and when exposed in the Focus of a great Burning Glass, it likewise manifestly discovers Iron. The Virtues of the Magnet in attracting and repelling Iron, and in turning its own Poles to those of the World, are very wonderful; and especially its being able to communicate these Virtues to the Iron which it touches.

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The Loadstone is not used inwardly in Physick, though Galen says it has the same Virtues as the Bloodstone, and also mentions its Purgative Virtue, and recommends it, on that Account, in Dropsies. Diascorides proposes that it be given, in the Quantity of three Oboli, to evacuate gross Melancholy Humours. Some think it possessed of a deleterious Quality, which is denied by others; but I imagine the poisonous Quality is to be understood of that other Kind of Magnes, mentioned by Theophrastus, which I take to be a kind of Native Litharge.

Under the Loadstone some rank likewise a White Stone, called by the Italians Calamita Alba, and Magnes Carneus; because, as the true Loadstone draws Iron, this is supposed to draw Flesh. It is a white Stone, marked with black Spots, which, is laid on the Tongue, sticks very strongly to it, and is no other than a kind of Rocky Marle, sound sometimes in the same Mines with the Loadstone. It is said to be of wonderful Efficacy in Love Affairs, but all the Stories told of it are sictitious and idle. The true Loadstone, externally used, is drying, aftringent, and consolidating. It is an Ingredient in the Emplastrum Manus Dei, Emplastrum Divinum, Emplastrum Nigrum, and Emplastrum Stypticum of Charas.

Magnesia, or Manganesia of the Glass-Makers, the Soap of Glass of Merret, is a fosfil, metallick, ferruginous Substance, resembling Antimony in its shining Colour, and very brittle. Pomet mentions two Kinds of it; one ash-coloured, which is not easy to be got, and therefore little used; the other black, which is very common. It is used in making and purifying of Glass; for, by mixing a small Quantity of it with the Glass, whilst in Fusion, it clears it from any green or bluish Colours, and makes it

more transparent and bright; and it was on that account that Merret termed it Sapo Vitri. If too great a Quantity of it be put in, it gives the Glass a purple Colour. It is used by Potters in colouring their Vessels black, as the Zaffera, already mentioned, is for blue. The same Merret says, the best Manganese is that which is hard, heavy, sparkling, and blackish, and which, being reduced to Powder, turns Lead black. It is dug in Germany, Italy, Piedmont, and in England, near the Mendip Hills in Somersetsbire, famous for Lead Mines; and, accordingly, Merret tells us, that where-ever the Miners find Manganese, they conclude that there is Lead Oar under it; but whether it contains any Lead or not, has not hitherto been discovered. It is not used in Physick.

The Lapis Petracorius of Pomet, or Perigordftone, is a fossil, ferruginous Substance, black, hard, and heavy, feeming to contain some Particles of Iron. It is dug in the Mountains of Dauphiny, and used only in painting Earthen Vessels, and by the Enamellers,

ART. III.

Of the Lapis Cadmia, Lapis Calaminaris, Tutty, Pompholyx, and Spodium.

THE Name Cadmia has been applied to feveral Things. Diascorides understood by Rasquia, the Recrements which arise from Brass, while melting in the Furnace. Galen applied it to two Substances, one which comes from Brass, which is the same with the Cadmia of Diascorides; the other a native Substance found in the Island of Cyprus, which he terms 1943 is, or Stony. Pliny, besides the Factitious Cadmia of Diascorides and Galen, mentions another by the Name of Lapis Ærosus, which he Name

fays was an Oar out of which Copper was made; and this is perhaps the fame with the Cadmia Lapidosa of Galen. The Dealers in Metals call by the Name of Cadmia the Lapis Calaminaris, used in making Copper into Brass; and the Germans have given the same Name to Cobalt; and therefore Agricola, and the more modern Writers, distinguish three Kinds of Cadmia; one Metallick, one Fossil, and the third that of the Furnaces; which Division we shall here retain.

The Metallick Calbnia is a Fossil Substance, containing some Portion of Copper, Silver, or of both, and is of two Kinds. First, the Native Cyprian Cadmia, which is a fossil Substance, or Copper Oar, as has been already said. It is likewise found in several Places of Asia and Italy; and is probably the same that Galen found in the Island of Cyprus, though he does not mention that Copper was obtained from it by Fusion. It is now altogether unknown, or at least consounded with other Copper Oars. The other Kind of Metallick Cadmia, or the Cobalt of the Germans, is a Metallick Substance, from which Arsenick, Zassera, and the Encaustum Cæruleum are prepared, in the Manner already described.

The Fossil Cadmia of Agricola, Stony Cadmia of Schroeder, Lapis Calaminaris, or Calamin, of the Shops, is a fossil Substance, of a middle Consistence between Stone and Earth, of different Colours; such as a pale Colour inclining to White, Yellowish, and a blackish Red. This last is full of small ferruginous Globules like Grains of Pepper, and marked with white Veins, and is found in great Quantities about Bourges, and near Saumur in Anjou in France. The others are dug in Germany, near Aix la Chapelle, and all Kinds of it seem to partake of an Iron Oar, because the greatest part is attracted by the Loadstone. This Species of Cadmia

was probably unknown to the ancient Greeks, or at least not used by them in Physick, since it is not mentioned either by Diascorides or Galen. It is now prescribed, by some Physicians, to dry running Ulcers, to heal the excoriated Parts of Children; either in a fine Powder by itself, or mixed with Ointments. It is an Ingredient in the Ophthalmick Ointment of Renodæus; and in the red Drying Ointment, the Plaister called Manus Dei, and in the Styptic Plaister of Charas.

The greatest Quantity of Calamin is consumed in making Brass; and Agricola describes two Ways of doing this, in the following manner:

They take small Pieces of the best Copper and Calamin, first calcined and finely powdered, and lay them in Strata in large Pots, each of which holds about fifty Pounds. Some add Glass likewise; and some use the Cadmia of the Furnaces, instead of the Fossil Kind. These Pots are set in an arched Furnace, on Iron Stands, placed in the Middle of it, and the Fire is kindled belowthem. In the upper Part of each Furnace, is a round Hole covered with a Stone, by which they regulate the Fire. When the Mixture in the Pots has been thus exposed to a very great Degree of Fire, and continued Infusion, for eight or nine Hours, it is changed to Brass, and increased very much in specifick Gravity, the it has not yet the Gold Colour. The Pots being cooled, are taken out of the Furnace; and the Brass, which is now of the Colour of white Embers, and Cavernous like a Pumice-stone, is melted a second time, and thrown into a Mould, the Sides of which are Stone, and the Wideness or Distance between these Sides equal to the Thickness that the Brass Plates, now become of a Yellow or Gold Colour, are defired N 3

fired to be of. These Plates are afterwards beat upon the Anvil, to make them perfectly uniform.

The other Way of making Brass is, to Take a Vessel, in which Silver is usually melted, to coat it on the outside with Clay, mixed with Filings of Iron, and to line the infide with the purest Honey. Small Copper Plates, of about a Finger's Breadth, are likewise rubbed over with the same Honey, and then covered with fine Powder of Calamin, Crude Tartar, and Charcoal made of the Lime Tree, mixed in equal Quantities. The Plates thus prepared, are thrown into the Vessel, and the Vessel covered with a Brick, over which the Coat of Clay is likewife carried, a Hole being made in the Middle large enough to admit an Iron Rod, to stir the melted Metal. The Vessel is then set in such a Furnace, as the Refiners use; and as soon as the Calamin begins to mix with the Copper, a red Smoke ascends, which afterwards becomes partly Red and partly Blue, and last of all Yellow; and this shews that the Mixture is now perfected. The Veffel being then taken out of the Furnace, the Brass is found of a perfect Gold Colour. In this Operation, the Copper takes up a third Part, or at least a fourth Part of its Weight of Calamin, and yet remains as dustile as before; for it may be drawn out into very fine Wire, or beat into very thin Leaves.

Cadmia Fornacia, or of the Furnaces, is of two Kinds; the factitious Cadmia of the Ancients, and Cadmia of the Moderns, or the Tutty of the Shops. But the first Kind of factitious Cadmia, Diascorides, Galen, and Pliny understood to be only the Recrements of Copper-Oar, which is blown off by the Bellows in melting Copper, and sticks to the Sides of the Furnace; of which there are different Species, accord-

according to the different Figures into which it is concreted, and the Fineness and Variety of its Colours. The finest Kind, fays Pliny, sticks in the very Edge or Border of the Furnace; and is as Light as Wood-Ashes or Embers. The best is that which hangs down from the Arch of the Furnace, called Borevasne, from the faint Resemblance it bears to Grapes, hanging on the Vine. This is of a middle Weight, between the foregoing Kind and the following, being of two Colours, one Whitish like Wood-Ashes, which is least esteemed, the other Purple, which is more valued. It is very brittle, and much used in Medicines for the Eyes. The third Kind sticks to the Sides of the Furnace, as being too heavy to rife to the Top. It is properly a Crust, and is used to destroy Cicatrices, or the remaining Marks of Wounds. From this, two other Kinds are obtained; one of a bluish Colour and spotted, the other red. The best Cadmia, according to Pliny, was found in the Furnaces of Cyprus; and he informs us further, that a Cadmia was likewise found in the Silver Furnaces lighter and whiter; but, however, much inferior to the Cadmia from Copper. Galen fays, that aSort of Cadmiawas made from one kind of Pyrites. But all these Kinds are now unknown in the Shops, neither do they feem to have been known to the Arabians, who were fo little follicitous about the Substances, called by the Name of Cadmia by the Ancients, and which were only to be found in the melting Furnaces of the Island of Cyprus, that they gave the fame Names without Hesitation to other Substances; whence a great deal of Confusion has arisen, and especially, because some of the latter Arabians, as well as those who have come after them, have endeavoured to apply to these other Substances what the Ancients faid of their true Cadmia; and thus Avicenna fays of the Litharge of Silver, all that Diascorides has said of Cadmia.

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The Modern Cadmia, Cadmia Fornacum of Agricola, Tutia of the Shops, is a Recrement of Calamin. melted with Copper, and not of Copper alone, as was that of the Ancients. The officinal Tutty therefore may be defined a Sublimation of Calamin from melting Copper to the upper Part or Roof of the Furnace, where it concretes round Iron Rods placed there, into a folid Crust, which is afterwards beat off into Pieces, like the Bark of Trees, of a yellowish Colour, smooth on the inside and sonorous; of a bluish Ash Colour on the outside, and powdered as it were with very fmall Grains of the This is perhaps the same with fame Substance. the Tutty of the Arabians, for Serapion describes a Kind of Tutty, which is produced and collected in the Furnaces, in which Copper is turned to a yellow Colour. But it is not certain, whether they might not likewise mean the Calamin itself by that Word.

Tutty is reckoned among the principal Ophthalmick Medicines. It deterges and dries without Acrimony, and is therefore prescribed with Success in Ulcers of the Cornea, Tunica Adnata, and Eye, Lids; and likewise in Itchings of the Eyes, inveterate Ophthalmias, and to stop an involuntary Flux of Tears and sistulous Humours. It is seldom used without Preparation, which consists in heating it red hot, and then quenching it three or four times in Rose Water, and afterwards levigating it according to Art on a Marble, or Porphyry.

Take prepared Tutty, balf a Drachm; Mouse Ear, Eye-Bright, and Rose Water, of each an Ounce. Mix them, and make a Collyrium. Or, Take Succotrine Aloes, and prepared Tutty, of each six Drachms; White Sugar, a Drachm; Rose Water, and any mild White Wine, of each six Ounces. Digest them in the Sun for forty Days,

in a close Glass Vessel, and keep the Liquor without straining it. It is applied by dropping a small Quantity of it into the Eyes from time to time. Or, Take of prepared Tutty, a Drachm; fresh Butter, half an Ounce; make an Ointment, of which a little is to be applied to the Corners of the Eyes, and Edges of the Eye-Lids. It is an Ingredient in the Ophthalmick Ointment of Charas.

The Pompholyx and Spodus, or Spodium, of Diafcorides and Galen, are now unknown in the Shops, They tell us, that it was made two Ways; the first, by burning melted Copper to a white, fmooth Powder; and the other, by blowing off with Bellows what can be thus separated from Cadmia. Diascorides mentions two Kinds of Pompholyx; one nearly the Colour of Copper, and moift or fatty; the other very white and smooth. This last, he says, was made by the Copper-Smiths, in endeavouring to meliorate that Metal, which they did, by throwing into it a greater Quantity than usual of powdered Cadmia; but it is uncertain, whether he here means new Oar, or the factitious Cadmia already mentioned. However this be, the fine Dust, or Flower, that arose from this Mixture, concreted into Pompholyx. It was likewife made by burning Cadmia alone in Furnaces; for having thrown it in small Pieces into the Fire, near the Nozel of the Bellows, they blew the most fine and subtle Parts against the Roof of the Furnace; and what was reflected from thence was called Spodium, which is of a blacker Colour and heavier than the Pompholyx, and full of Earth and other Filth; and indeed was no better than the Sweepings of the Shops and Furnaces, and therefore was much less esteemed than Pompholyn. These Substances might probably still be had, where great Quantities of Cyprian or red Copper are melted; but they are now unknown in the Shops, The

The Pompholyx of our Shops, Nihil Album of some Authors, is a fine white Flower, or Soot, which slicks to the Arch of the Furnaces and Covers of the Crucibles, in which Calamin and Copper are melted together. It is to be chosen very clean, without any Mixture, and has the same Virtues with Tutty. It dries, and is gently aftringent without Acrimony; it absorbes the corroding Acrimony of the Fluids, and from thence is reputed a Cooler. It is used with Success to dry old cancerous Ulcers, and to cure Defluxions of the Eyes. From this Substance is prepared the Unguentum Diapompholygon.

We have already faid, that the Spodus, or Spodium, of the Greeks, was the Ashes, or rather the Metallick Flower, collected in the Furnaces and Shops of Copper-Smiths, and that it differed from their Pompholyx in being heavier, and not so pure. Pliny has, however, diffinguished feveral Kinds of it; the Spodium of Copper, which is the best of all; that of Silver, called also Laurosis, from Mount Laurus, where there were Silver Mines; that of Gold, collected in refining that Metal; and that of Lead, which was next in Goodness to the Copper Spodium, according to Diascorides. The Spodium of the Greeks was never given inwardly, but was applied externally. Besides these Metallick Kinds of Spodium, the Arabians abusing that Name, which in the Greek Language, is very like the Word, which fignifies Ashes. added other Kinds, fuch as the Ashes of Plants and Animals. These Succedanea to the true Spodium were, by the Greeks, termed Antispoda; some of which are mentioned by Diascorides; such as the Leaves, Flowers, and unripe Fruit of the Myrtle, calcined and washed; the Leaves of the wild Olive; Bulls Glue; new-shorn rough, greafy Wool; Pears or Apples, moistened with Water, and then burned and fuch like. The Ashes of some burnt Roots were by Avicenna termed Tabascir, which Word the Interpreters have rendered Spodium; and that Spodium, which was brought from the Eastern Countries, was undoubtedly a kind of coarse Sugar, as is proved, by very strong Arguments, by the learned Salmasius; and therefore it is no wonder, that, by the Arabians, and those who followed them, the inward Use of Spodium has been so much recommended. The Arabians were deceived by the Ash Colour of coarse Sugar, and the Merchants by what was related to them, that it was the Powder of some burnt Reeds. Burnt Ivory is now commonly called Spodium in the Shops.

ART. IV. Of Chalcitis, Mify, Sory and Melanteria.

C Halcitis, Misy, and Sory, are fosfil Substances, very much resembling each other, both in Original and Virtues, found chiefly in the Mines of Cyprus. Galen says, he found these Substances in the Mines, lying in long Strata upon each other; the lowest Stratum being the Sory; the middle, the Chalcitis; and the uppermost, the Misy. He likewise informs us, that in Length of Time, the Chalcitis changes into Misy; for having kept a Piece of Chalcitis, which he took out of the Mine, for about thirty Years, he found the outer Surface of it changed to Misy, the middle remaining unaltered; and by some small Alteration, which he observed in Sory, after a long time, he concludes, that it is likewise changeable into Chalcitis.

The Chalcitis of the Greeks is a fosfil Substance, resembling Copper, brittle, but not stony, and variegated by a Mixture of shining Veins, finer than Miss, but coarser than Sory; and in the Fire turns to the Colour of Blood, or of Minium. The Miss of the Greeks, is a fossil yellow Substance, sparkling like Gold, and shining when broken, growing from

Chalcitis,

Chalcitis, as Verdegrease does from Brass; and seeming to be nothing more than an Efflorescence from that Substance. The Sory of the Greeks, is a soffil Substance, thicker and more compact than Chalcitis, which emits Sparks by Attrition, and is of a spungy Texture, full of Holes, of a viscid Texture, black Colour, astringent nauseous Taste, and of a strong hurtful Smell. This Description agrees very well to a Substance, which the Turkish Women make use of to take off Hairs from their Bodies, called by them Rusma, which is described by Bellonius to be a soffil, almost like Excrement, in Appearance, but lighter, and of a black burnt Colour like Pitch, found in some Mines in Gallo-Græcia. The way of using it is this:

They reduce it to a fine Powder, and mixing with it an equal Quantity of Quick-Lime, they macerate it in Water, in an earthen Vessel. When the Women are to go into the Bath, they lay it on such Parts as they want to have smooth, and let it remain for about as long time as is required to boil an Egg. Then sinding by the Touch, that the Hairs are loosened and ready to fall off, they wash the Part with warm Water, and the Paste and Hairs come off together. Our Barbers use Orpiment and Quick-lime for the same purpose.

Melanteria of the Greeks is faid, by Dioscorides, to be fometimes found, like concreted Salt, in the Paffages to Mines, from whence Copper is dug; and he observes, that the best was reckoned that which is of a Gold Colour, smooth, clean, and even, and which turns black as soon as it touches Water.

These fossil Substances are now rarely found in Apothecaries Shops, being to be had no where else than in Cyprus, Asia Minor, or Egypt. They are caustick, and burn to an Eschar, and are in some

Degree

Degree astringent. Chalcitis was used in the Theriaca in Andromachus's time; but as it can seldom now be had, Colcothar or Vitriol calcined to Redness is substituted for it.

CHAP. II.

Of Metallick Fossils of a peculiar Nature, called Metals by some.

ART I. Of Antimony.

STibium, or Antimony of the Shops, simul of Diafcorides, probably the magazerov of Hippocrates, Lapis Spumæ Candidæ nitentisque, non tamen translucentis of Pliny; Ailmad or Alamad of the Arabians, is a metallick, folid, heavy, brittle Substance, of a lead Colour, with long shining Streaks, fusible by Fire, but not ductile. Native Antimony is of different kinds; fome is dug up with the Appearances of polished Iron or Lead, but brittle and mixed with white or crystalline Stones. Some is composed of fine shining Lines like Needles, sometimes disposed in regular Ranks, fometimes without any observable Order, which is termed Male Antimony. Some is disposed in thin broad Plates or Laminæ, called Female Antimony by Pliny. Some is a Congeries of small Lead-colour'd Rods, got from a tender white Stone, and eafily melting in the Fire like Sulphur, which enters its Composition in great Quantities. Antimony of this kind is found in feveral Parts of Italy. Some is marked with Saffron-colour'd or reddish Spots, as the Hungarian Antimony, mightily efteemed by Chemifts, because of the Golden Sulphur, with which they imagine it to be stock'd. Antimony is fometimes found in a particular Oar,

but most commonly mixed with other Metals; and hence its Name may have been derived. Antimony being the same as artiuovov, an Enemy to Solitude.

Oars of Antimony are found in many Countries, and very plentifully in feveral Provinces in France, Auvergne, Poictou, Britany, and others. The Glebes of Antimony are dug out of the Earth, mixed with a ftony Matter, and the pure Mineral or Metal is feparated by breaking the Glebe into small Pieces, and afterwards treating it in the same manner as in

refining other imperfect Metals.

The French Antimony confilts of almost equal Parts of common Sulphur, and of a reguline Substance. The Sulphur in Antimony is discovered by the Smell and the blue Flame, which it emits, when calcined in a dark Place; and when thrown into a Crucible with Nitre, it fulgurates in the fame manner as a Mixture of Nitre and Sulphur. By diffilling Antimony with corrofive Sublimate, we get the Cinnabar of Antimony, which confifts of the Sulphur of Antimony, and the Quickfilver of the Sublimate. If Antimony be boiled in common Water. mixed with four times its Quantity of Quick-lime or Pot-ash, the Sulphur it contains being dissolved in the Water, by means of the alcaline Salts, may be precipitated by Vinegar, or any other Acid. reguline Substance is fusible not ductile, shining like polished Iron, and seems to consist of broad Laminæ; which, when the Regulus is rightly prepared, are disposed in a radiated Manner, so as to exhibit the Appearance of a Star on its upper Surface. This Regulus may, by being calcined in the Sun, be feparated from almost all its Sulphur, and turned to an Ash-colour'd true vitrifiable Calx; which being melted by a strong Fire, is converted into a Hyacinth-coloured Glass. If to this Glass, while in Fufion, any fulphurous or other inflammable Substance, be added, it presently recovers its reguline Form and

and Splendor. Because of the great Quantity of Sulphur which Antimony contains, an acid Liquor may be extracted from it, in nothing different from Spirit of Sulphur. From all which Observations, it is evident, that Antimony confifts of a fulphurous Acid, of a bituminous inflammable Part, and of a vitrifiable metallick Earth. The Regulus of Antimony is diffolved by Aqua Regia; but is only calcined by the other Diffolvents of Metals. Antimony diffolves and deftroys all Metals, except Gold, when melted with them. From this Property of Antimony, many Names have been given it by Chemists; such as the Devouring Wolf; Saturn. who eats his Children; the Lead of the Wife; and the Sugar of the Sun; because Gold, melted with Antimony, is purified from all other Metals with which it is mixed, and comes out brighter and cleaner than before. Antimony is commonly thought by Chemifts, to contain a true, but unripe, folar Sulphur; and hence it has been called Leprous Gold. and the Ens primum solare; but it shall be shewn hereafter, that the Sulphur of Metals is not different from the pure Original Sulphur, or Oil of Animals and Vegetables.

Among the Ancients, Antimony was used to dye the Supercilia and Cilia Black. Accordingly we find in Scripture, that the wicked Queen Jezabel, in order to charm the King her Husband, painted her Eyes with Antimony; and the Women, who used that Practice, are also reproved by the Prophets; and from thence it was, that this Mineral got the Name of yurakeev. Antimony, according to Diafcorides, is aftringent, obstructs the Passages, cools, prevents Excrescences in the Flesh, cicatrizes Ulcers, stops Bleeding, and cleanses the Filth and Ulcers of the Eyes. Galen mentions its aftringent and drying Vertue, and fays, that it was used by Oculists in their dry Collyriums in that Intention. It was the

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Custom of the Ancients to burn it, then to quench it in Womens Milk, or Wine, and having afterwards reduced it to Powder, to make it up into little Pastils: which being perhaps of a quadrangular Figure, it was from thence called rereaguror by Hippocrates. The Emetick Virtue of Antimony feems to have been unknown to the Ancients, or at least they feldom used it as a Cathartick. Diascorides indeed mentions it in one Place, as an Ingredient in a purging Medicine made of Elaterium and Salt; but the Antimony feems to have been there ordered only to give a Colour to the Composition. Its Cathartick Quality became generally known, about the twelfth Century, in which a German Benedictine Monk named Bafilius Valentinus, published a Book called Currus Triumphalis Antimonii, where he extolles the Virtues of that Mineral and its Preparations, in the Cure of an infinite Number of Diseases. In the fifteenth Century Paracelfus, following the reigning Opinion, made the Fame of the Virtues of Antimony become still more Universal; however, Physicians disputed afterwards with great Warmth and Virulence, concerning the beneficial and deleterious Qualities of Antimony. At prefent, they are all agreed, that it is a very powerful and fafe Medicine; and they acknowledge two Virtues in it, depending on its different Preparations, one Emetick, or Cathartick; the other Diaphoretick; for all Medicines prepared from Antimony do either purge upward or downward, or are Diaphoretick and Sudorifick. Crude Antimony is feldom used in Physick; tho' it is certain, that it possesses no hurtful Qualities, since it may be taken inwardly in the Quantity of a Drachm or two without exciting any Nausea, and is often boil'd in sudorifick and drying Apozems, without communicating to them any emetick or other prejudicial Virtue; and indeed that way of treating Antimony has no Effect at all, fince it communicates nothing to the Water,

at least nothing that the Water can retain, how long foever it be boiled in it. The active Qualities of this Mineral are therefore intirely owing to its Preparations, except it be rendered Emetick by some acid Juices, which it meets with in the Stomach.

Crude Antimony taken inwardly in the abovementioned Quantity, diffolves Vifcidities in the Fluids, opens Obstructions, and is commended by some as a safe Remedy in cutaneous Diseases, in Consumptions and Epilepsies. It is likewise of great Use in fattening Brutes. The external Use of it is likewise recommended for drying Users, in curing the Itch, and other Diseases of the Skin, when mixed in Ointments; in Plaisters for resolving Tumours; and in Collyria for Instammations, and other Affections of the Eyes.

The most common Preparations of Antimony, are the Hepar or Liver of Antimony, Crocus Metallorum, Vinum Stibiatum, Emetick Tartar, Glass of Antimony, the Golden Sulphur of Antimony, and the Flowers, Butter, and Cinnabar of Antimony, the Powder of Algaroth, the Universal Panacea, Bezoar Mineral, Diaphoretick Calx, or Diaphoretick

Mineral, and the Tincture.

The Liver of Antimony, and Crocus of Metals, are commonly prepared in this manner:

Take equal Parts of Antimony and Nitre finely Powdered. Mix them perfectly, and cause them to detonate in a Metal Mortar, by throwing in a burning Coal, till the Whole is sufficiently deslagrated, and reduced to an half vitristed Mass; which, from its Colour, is termed the Liver of Antimony. Reduce this Mass to a very fine Powder, and let it be washed three or four times in warm Water till it is deprived of its Salts. This Powder, afterwards dried is termed Crocus Metallorum, or Terra Sancta Rulandi. When given in Substance, from two to five Grains,

it is a very strong Emetick; and from it is prepared the emetick Wine, by infusing it to the Quantity of three Ounces in three Pints of White or Spanish Wine, for two or three Days, Shaking the Vessel often. The clear Wine swimming at the Top is given for a Vomit, from one to four Ounces.

To make Emetick Tartar:

Take Liver of Antimony, Crystals, and Cream of Tartar, of each equal Parts. Boil them in a sufficient Quantity of common Water, for fix or eight Hours; then strain the Liquor, and evaporate it to Dryness. The dry Mass is emetick Tartar, which is given as a Vomit from two to fix Grains.

This is by far the best Emetick, that can be prepared from Antimony, and may be given in any Form; and as the Doses of it are easily adjusted, they may be fafely increased or diminished in any requifite Degree, that the Physician shall judge the Strength of the Patient, or Nature of the Disease to require; whereas the same Quantity of the Wine above-mentioned may be more or lefs Emetick, according to its Acidity or Ripeness. In making the Liver of Antimony, fome add to the Antimony and Nitre decrepitated Sal Ammoniac, and thus make what is called the Opalin or Ruby-colour'd Magnefia of Antimony, from its red Colour, which is a much weaker Emetick than the Liver of Antimony, and does not cause Vomiting in Horses, and other Quadrupeds, but only makes them fweat, or increases Perspiration. It is given to such Brutes from one to three Ounces once every Day, for feveral Weeks together, to fatten them, and cure their cutaneous Difeases, or other Indispositions. Crocus Metallorum is likewise used to take away Spots in the Eyes, and to cure Ulcers, Itchings and Pfora of the Cornea Adnata or Eye-Lids.

The Glass of Antimony is thus made:

Take any Quantity of Crude Antimony finely powdered, and calcine it in a broad, flat, shallow, unglazed Earthen Dish, over a moderate Fire, stirring it continually with a Tobacco Pipe, or any other Spatula, not made of Metal, to keep it from sticking to the Bottom of the Dish. Great Care must also be taken, that the Operator do not inspire the Fumes, which it emits. When it has done Smoaking, and becomes of an Ash-colour, the Calcination is finished. If the Powder should happen to run into Lumps or Knots, they must be powdered over again.

This is the Calx of Antimony, two or three Ounces of which being melted in a Crucible, and then poured on a Marble, and there fuffered to cool, make the Glass of Antimony, which is of a Hyacinthcolour; but may be made White, Yellow, Red, or Black, by the Addition of Borax, Sulphur, Sal Gem or Orpiment. Glass of Antimony is a very strong Emetick, but may be weakened by powdering it on a Marble, and then burning Spirit of Wine upon it, for three or four times. Thus deflagrated, it may be given in the Quantity of ten or twenty Grains, which will either vomit or purge gently, and fometimes only cause a Sweat; on which Account it fometimes cures Intermitting Fevers, if given a little before the Paroxysm. If this Glass reduced to an impalpable Powder, be digested for two or three Days with Spirit of Whe, in which half an Ounce of Mastich has been dissolved, shaking the Veffel often, and the Spirit be afterwards evaporated by a gentle Heat, the remaining Glass of Antimony

and Mastich, incorporated in this manner, will have no emetick Quality. This Powder may be taken in the Quantity of fix Grains.

The Regulus of Antimony is thus prepared:

Take of Antimony, fixteen Ounces; Crude Tartar, twelve Ounces; Nitre, five Ounces; powder, and mix them well together, and throw the Powder in small Quantities at a time into a hot Crucible. When the Deflagrations are over, throw in an Ounce of Nitre by itself, and increase the Fire, till the whole be throughly melted. Pour the melted Substance into a warm Brass or Iron Cone, that the Scoriæ may more easily be separated from the Regulus; and when it is cold, take out the Mass, and separate the Regulus. If a more pure Regulus be defired, melt it a second time with the Addition of a small Quantity of fresh Nitre, and then pouring it into the Cone as before, a pure white Regulus will be obtained with the Star very perfect on its Surface.

Of this Regulus of Antimony Cups are made, which communicate an emetick Quality to Wine, which has stood in them for a Night's time. It is likewise made into little Balls or Pills, which are both Emetick and Cathartick, though fwallowed a thousand times, from whence they have the Name of the Perpetual Pills.

Reguli of Iron, Copper, Tin, Lead, Silver, and Gold, are made by melting thefe Metals with the Regulus of Antimony. The Scoriæ found above the Regulus in the Cone, are of a yellow or Saffron Colour, and fully impregnated with the Sulphur of

Antimony.

The Golden Sulphur of Antimony is prepared different ways; and, on account of its excellent Quali-

ties,

ties, has been called by different Names. It is termed Sulpbur, because it is inflammable like common Sulphur, and emits a fœtid Smell; but it differs from it in this, that it always retains some reguline Parts, and is therefore specifically heavier. It is called Golden Sulphur, because Chemists have imagined, that it came near the Nature of the Sulphur of Gold; and because, when mixed with Silver over the Fire, it gives it a Gold Colour. Chemists likewife name it Sulpbur Embryonatum, procured from the Saturnine Magnefia; believing it to contain some Portion of the Sulphur of Gold, got from Antimony, which they term Magnesia Saturnina. Glauber calls it Panacea, and the univerfally Purging Sulpbur; and it was given, for a long time, by Cardilucius, a famous German Chemist, by the Name of the Lesser Centaury. It is likewife the fame Powder which has lately been fo much in vogue, by the Name of Kermes Mineral, or Powder of the Carthufians, because it was first disguised under that Title by Monks of that Order; and it is the same with Ruffel's Powder, which has been fo famous in England. All the ways of preparing this Golden Sulphur may be reduced to two. The first and most common is, by first dissolving the Sulphur of Antimony by some alkaline Salt, and then precipitating it by distilled Vinegar, or fome other Acid. The fecond is, by precipitating the fame Sulphur of Antimony, first diffolved by an Alkali, without the Help of any Acid. The first Golden Sulphur is made of the Scoriæ of Antimony, prepared with Tartar and Nitre in this manner:

Take the Salino-Sulphureous Scoriæ, separated from the Regulus, and boil them in a sufficient Quantity of common Water. Strain the Decostion thro Cap-paper, and then pour upon it distilled Vinegar, as long as the Mixture continues turbid. A fine

fine Powder will remain at the Bottom of the Vessel, the \lim_{t} id Liquor being gently poured off by Inclination.

To make this Sulphur the fecond Way, which is that used by the Carthusians in making their Kermes Mineral,

Take of Antimony, four Pounds; Solution of fixed Nitre, one Pound; Rain-Water, three Pounds, and boil them for two Hours. Then the Boiling Decoction is passed through Cap Paper, and jet in a quiet Place for twenty-four Hours, till a yellowish or saffron-coloured Powder sink to the Bottom of the Vessel, the Liquor remaining clear. This Liquor being poured off by Inclination, the Powder is first washed by frequent Assusing warm Water, till it is deprived of all its Salts; and then about four Ounces of Spirit of Wine are burnt over, it, and it is afterwards dried, and kept for Use.

This Powder is looked upon as a kind of Panacea, or Universal Remedy. It sometimes excites Vomiting, especially when it meets with any Acid in the Stomach, and is fometimes Cathartick, Diaphoretick, and Sudorifick, according as it is determined by the Disposition of the Patient to act upon any one Humour more than on another. It is given from one to four Grains; or fometimes, when it is defigned only to attenuate and divide any Viscidities in the Fluids, in the Quantity of half a Grain, repeated every three, four, or fix Hours. In Acute Feyers, where there is a great Crudity and Spissitude of the Humours, it is given in small Doses with Success. It changes the crude and ferous Evacuations by Stool into a more bilious Confiftence, by attenuating the viscid Bile, and so disposing it to pass off by Stool.

It is often given with Success in the Beginning of the Small-pox and Measles, when they are apprehended to be of a bad Kind, at finall Dofes mixed with Bezoardick Powders or Abforbents, fuch as Crabs Eyes, Red Coral, Pearl, Egg Shells, Crabs Claws, and the like; for thus it excites a Spitting and Diaphoresis, removes Anxieties, corrects the Lympha, and coagulated Serum, and raifes fuch an Effervescence in the Blood as tends to purify it. Glauber confirms these Virtues by the Examples of seven Children in the Small-pox. Frederick Hoffman commends the Use of this Powder in stubborn Autumnal Agues, because it powerfully opens Obstructions, especially of the Liver, by which thefe Fevers are produced, especially when taken in the Quantity of a Grain, mixed with detergent anti-febrile Salts; fuch as the Salt of Wormwood, the febrifugous Salt of Sylvius, vitriolated Tartar, and the like. Schroeder ordered it in the Quantity of half a Grain, or a Grain, three or four times a Day, in the intermitting Fevers of Children, and commends it very much in correcting the Acrimony of the Serum, and especially that of Tears, which give Pains in the Eyes, and produce very bad Ophthalmias. The fame Author mentions a Woman labouring under Scorbutick Symptoms, and Defluxions of fo acrid a Kind as to corrode her Lungs, and bring on a Spitting of Blood, who, by using this Sulphur of Antimony in very small Quantities, corrected the Acrimony, and stopped the Motion of this Serum, and thereby prevented the Growth of a Difease, which must otherwife have been of very fatal Confequence. Hoffman fays it is a most effectual Remedy in such Chronical Diseases as arise from long Obstructions of the Vifcera. In a Dropfy, for Instance, it is very properly mixed with the Filings or Crocus of Steel and Nitre; in Epilepsies, with all the Cinnabars; in the Scurvy, with the Arcanum Duplicatum; in Dysenteries, with the

the Confectio de Hyacintho; in a Dyfury, or Complaints of the Stone, with White Nettle or Pellitory Water; and even in Pleurifies and Peripneumonias. he frequently gives it, in the Quantity of three or four Grains, in a Glass of strong Spanish Wine, in Carduus Water, in an Infufion of Red Poppies, or in the Juice of Dendelion, or Borage. Junkerus observes, that this Powder has in many Patients fuspended, in one Moment, the Effects of a suffocating Catarrh, fometimes by producing a gentle Vomiting, fometimes by Sweating, and fometimes without any fenfible Evacuation; and he advises it to be mixed in these Cases with a certain Digestive Salt. It may be given very advantageously to Cachectick Girls, in the Quantity of a Grain mixed in ten Grains of Crocus Martis Aperiens, and of the Arcanum Duplicatum, the Dose being repeated twice a Day. This Powder may be given either alone, or mixed with a little Sugar, and diluted with Wine or Water, or any other proper Liquor. It is likewife fometimes given with Oil of Sweet Almonds, or in Conserve of Violets, Borage, &c. in Form of a Bolus.

It is however to be carefully observed, that this Powder is not to be given till the Quantity of Blood has been lessend, and all the Fluids sufficiently diluted and attenuated; for, as by the Use of it, the Blood is very suddenly rarified, and put into a kind of Esservescence; if the Vessels are before full, they must be still more distended, by the increased Heat and Motion of the Blood and other Fluids, and hurtful Congestions may be found in the Viscera. It ought therefore never to be given, till the Dangers from a Plethora are taken off, and till the Humours have been rendered sluid by great Quantities of Diluents often repeated,

The Livivium, in which Antimony has been boiled, passed through Cap Paper, is recommended by some

in Scabs, and other Diseases of the Skin.

The Fumes which arise from ignited Antimony, may be collected in white, yellow, and red Flowers, if proper Vessels are made use of, and, by adding powdered Glass, Sal Ammoniac, or Nitre, that they may rise in greater Quantities; and these Flowers being edulcorated by frequent Lotions, are Emetick, Cathartick, and sometimes Sudorifick, being given from two to twelve Grains.

From the Martial Regulus of Antimony, the Silver Flowers known by the Name of Antimonial Snow,

are prepared in this Manner:

Take of the Martial Regulus, a pound; put it into a large Earthen Pot, placed in the midst of burning Charcoal: Let a Cover be perforated in the Middle, and so placed as that there may be the Breadth of two Fingers between it and the Reguline Powder; and place another Cover over the Mouth of the Pot. Give a very strong Degree of Fire for an Hour, till the Regulus is perfectly melted: Then, the Vessels being suffered to cool, the Silver Flowers are found in Form of small Spicula, in the void Space between the first Cover and the Regulus.

These Flowers cause a Diaphoresis and Sweat, and are therefore prescribed in Malignant Fevers, and other Diseases where a Diaphoresis is required. They often cure Intermitting Fevers, given from ten to forty Grains, a little before the Fit.

The Butter of Antimony, called Spuma Venenata duorum Draconum, and the Cinnabar of Antimony,

are to be made in this Manner:

Take any Quantity of crude Antimony, and of Corrofive Sublimate; Being first powdered and well mixed, let them stand in a cool Cellar for one Night: then distil them in a Retort with a white short Neck. The Fire being gentle at first, a white beavy Liquor comes over; then increasing the Fire, the Butter sometimes runs, sometimes sticks to the Neck of the Retort, in Form of Crystals or Ice. These Crystals are melted by applying burning Charcoal to the Outside of the Retort. As soon as a reddish Soot begins to stick to the Neck of the Retort, the Receiver, with the Butter of Antimony contained in it, is to be removed, and another put in its place; then, by giving a very strong Degree of Fire, the Quickfilver will be seen to fall into the Receiver, and the Cinnabar will flick to the Neck of the Retort.

The Butter is rectified by being distilled in another Glass Retort, in a Sand Heat. It is a very powerful Caustick, and eats away all sleshy Ex-

crescences, and stops a Sphacelus.

The Cinnabar, which sticks in the Neck of the former Retort, is powdered, mixed with its own Caput Mortuum, then sublimed by a gentle Fire. It is of a dark red Colour, and is recommended in all Diseases of the Head, especially in Epilepsies. It is likewise used in Venereal Cases, and operates by Sweat. The Dose is from six to sisteen Grains.

Pulvis Algaroth, or Mercurius Vitæ, is prepared from the Butter of Antimony, by pouring upon it large Quantities of warm Water, by which the Antimony dissolved in the Butter is precipitated in Form of a white Powder, which must be edulcorated by frequent Lotions, and then dried. It vomits and purges very strongly, being given from two to six Grains; but it is very improperly termed Mercurius Vitæ, since there is no Mercury in it.

The

The Universal Antimonial Panacea is prepared from the Butter of Antimony in this manner:

Take of Butter of Antimony, balf a Pound; Crystals of Tartar well powdered, a Pound. Pour on them a Pint of common Water in a large Matrass; mix and boil them in a Sand-heat for eight Hours; and while the Liquor is hot, drop into it a Pound of Ol. Tartar. per Deliquium. After the Effervescence is over, strain the whole through Cap-paper, and evaporate it to Dryness, in a Glass Vessel, over a slow Fire. A Salt will remain at the Bottom, which is to be set in a cool Cellar, till it runs into a limpid Liquor, which muft be carefully separated from the Faces. It purges gently upward and downward, being given from eight to twenty Drops in a proper Vehicle. It differs from Emetick Tartar only in running per Deliquium.

Antimony has neither any emetick or cathartick Quality; (all its Effect being to increase infensible Perspiration, or provoke Sweat) if its Sulphur be fixed by mineral Acids, as is seen in the Preparation of Bezoar Mineral; which is in this manner:

Put into a Retort any Quantity of Butter of Antimony, and drop upon it Spirit of Nitre, till the Efferve-fcence ceases. Having then digested them for twelve Hours, draw off the Spirit in a Sand-heat. On the remaining Mass, pour the same Quantity of fresh Spirit, and distill as before. Then calcine the remaining Mass in a Crucible, till it ceases to emit Fumes; wash the Powder in warm Water, and then dry it.

This Preparation is commended by Van Helmont in the Plague, and other malignant and contagious Difeases,

Difeases, as a most excellent Diaphoretick, given from half a Scruple to half a Drachm.

It may be made a shorter Way, by Pouring four Ounces of Aqua Regia on an Ounce of Regulus of Antimony, and digesting them for some Days in a gentle Heat; shaking the Vessel every now and then, till all the Regulus is turned to a very white Powder, which is to be washed and edulcorated by a large Quantity of common Water.

Diaphoretick Antimony, the Diaphoretick Calx of Antimony, or the Diaphoretick Mineral, is made by Deflagrating successively Crude Antimony, or its Regulus, mixed with triple the Quantity of Nitre, by which means the Sulphur of the Antimony is fixed by the acid Salt of the Nitre. The white Calx, which remains after the Deflagration, is to be well washed with warm Water, and then dried; and it may be given from ten Grains to a Drachm.

It is an excellent Diaphoretick, when given inwardly in a sufficient Dose, resolving Obstructions, attenuating thick and viscid Fluids, and forcing them either sensibly or insensibly, through the Pores of the Skin. It is prescribed with Success in all malignant Diseases, in a Pleurisy, Erysipelas, and Diseases of the Skin; and it makes an Ingredient in the Pulvis Cornachini, and Pulvis Febrifugus of Morton.

Various Tinctures are drawn from Antimony, and Authors are of various Opinions about them. We shall give one simple, and one more compounded

Tincture, as Specimens of the rest.

Take of Sal Tartar eight Ounces; melt it in an ignited Crucible, and then immediately throw into it by Spoonfulls six Ounces of Crude Antimony. Cover the Crucible, and let the whole be calcined in a strong Fire for half an Hour; afterwards throw

throw the Mass into a Brass Mortar, and as soon as it hardens, reduce it to Powder. Throw this Powder into a large Matrass, and pour upon it as much restified Spirit of Wine, as will cover it to the Height of four Fingers Breadth. Then stopping the Vessel very close, digest for several Days, till the Spirit is tinged with a deep red Colour. Afterwards filter the Tinsture, and keep it for Use.

This Tincture causes Sweat, seldom excites a Nausea sometimes, purges gently, and proves Diuretick. It is recommended in hysterical Affections and Melancholy, to break the thick Parts of the Blood, in Apoplexies and Palsies, and to open Obstructions in the Viscera, in malignant Fevers. The Dose is from four to twenty, forty, or even fixty Drops, in a proper Vehicle.

The more Compound Tincture, much celebrated by the Name of Lilium, or Tinctura Lilii Paracelsi, is made from Metallick Reguli, in this manner:

Take of thin Copper-plates, an Ounce; ignite them in a red bot Crucible; and then throw in upon them balf an Ounce of powdered Martial Regulus of Antimony; and the whole being presently melted, add four Ounces of Tin, stirring the Mass now and then with an Iron Rod; and when it is in perfect Fusion, throw it into a well-greased Cone, and it will foon barden into a reguline metallick Mass. This Mass being reduced to Powder, is to be mixed with a Pound and half of Nitre, and half an Ounce of powdered Charcoal. Throw this Mixture by Spoonfulls into a red hot Crucible; and after each Projection, cover the Crucible, till the Fulmination is over. Calcine the whole in a very strong Fire for two or three Hours, stirring it at times with an Iron Spatula. Then pour it into a Brass or Iron Mortar; and before

before it has time to cool, powder it well, and inmediately throw it into a proper Matrass, and pour
upon it as much Spirit of Wine, as will stand four
Fingers Breadth above it. Digest in a Sand-heat
for sifteen Days, and the Tinsture will be what
is called Tinctura Lilii, or rather, Tinctura Metallorum; which is both Sudorifick and Diuretick;
given from ten to a hundred Drops, in a convenient
Vehicle.

It is much commended in Malignant Fevers, Apoplexy, Palfy, Scab, Rheumatifm, Scurvy, Dropfy,

and a Suppression of the Menses.

Having now given a fufficient Account both of the emetick and diaphoretick Preparations of Antimony, it is proper to fay fomething of the wanner in which both these Effects are produced by them. Vegetable Acids being of their own Nature more attenuated, than those which belong to Minerals, eafily unite with the rarified Sulphur of Antimony, and thus feparating that Sulphur from the Vitriolick Acid contained in the Antimony, an Emetick Compound is formed; but Mineral Acids being more dense, fix and wrap up the Salphureous Parts of Antimony, fo as not to stimulate the Stomach and Intestines, but to let them pass freely into the Blood, before they can be difengaged, and act according to their own Nature. Spirit of Wine destroys the Emetick Quality of Antimony, because of the too great Proportion of Sulphureous Parts, by which the Saline Spicula are so much involved, as not to be able to act on the Stomach.

Antimony is the most excellent Emetick we have, and the most sovereign Remedy in many Diseases, when rightly exhibited. In giving Emeticks, three Things are to be considered; the Patient, the Disease, and the Medicine. We ought first of all to be informed, whether the Patient vomits easily; some Persons cannot be made to vomit with any Dose

of an Antimonial Medicine: Some are so weak as not to be able to bear the Fatigue and Straining of a Vomit at all; Some are fo subject to a Spitting of Blood, that, by giving them a strong Emetick, a fatal Hæmorrhage might enfue. We ought likewife to know whether the Patient has any confiderable Hernia; in which Case violent Vomiting might produce very dangerous Confequences; whether the Veffels be fo full, as that a Rupture of any of them may be apprehended; and, laftly, whether the Patient, if a Woman, be with Child. In all these Cases Vomits feldom ought to be ventured upon, and never without taking the greatest Precautions before-hand.

The Second Thing to be confidered is the Difease itself, and especially, whether the Seat of it be in the Blood, or in the Prime Via, which may be discovered by a Bitter Taste in the Mouth, Nausea,

bilious Eructations, acid Vomiting, &c.

Some imagine that Emeticks can be of no real fervice when the morbid Matter has reached the Mass of Blood, or when the Disease proceeds from an Ataxia, or Deprivation of the Spirits, as in many Spafmodick, Hyfterical, and Hypochondriacal Affections. But this is a Mistake; for we find Antimonial Vomits are given with very great Success in such Cases; not so much as they evacuate what was before contained in the Stomach; as by deriving the morbid Matter from the principal Parts, the Lungs, for Instance, or Pleura, when threatened or actually effected, into the Abdomen, from whence it is eafily and readily carried out of the Body. And for this Reason Hippocrates very wisely advises to have Recourse to this Remedy in the Beginnings of such Difeases. In Convulsions, an Emetick by applying a Stimulus to the Fibres, of a contrary Nature to that from whence the Diforder proceeds, very often gets the better of that morbid Cause, and thus cures the Disease. For the same Reason Hippocrates gave Emeticks

Emeticks in Diarrhæas and Dysenteries, that the Tendency of these Evacuations might be directed upward, and fo destroyed. In Comatose Affections: Emeticks powerfully shake the Viscera, increase the Oscillations of the Nervous Fibres over the whole Body, and accelerate the Motion of the Fluids, or restore it when lost in any particular Part, so as to make them pass through the smallest Canals to their proper Emunctories. Thus we often fee one Dofe of an Antimonial Emetick, prove likewise Cathartick. Sudorifick, &c. in a very plentiful Degree. In giving these Emeticks great Care ought to be taken that none of the abdominal Viscera be inflamed. because such Inflammations might very probably be increased by the Strain of Vomiting. We must not likewise be misled by all Kinds of Reaching, or Attempts to vomit; for thefe are many times owing to convulfive Contractions of the Stomach, which by giving an Emetick may be increased, or perhaps that whole Viscus be inflamed.

Thirdly, fuch Preparations of Antimony are to be chosen, as may be given with Safety, of which the Dose may not be too great for the Strength of the Patient, and yet may answer the Intention of the Physician. Antimonials given in Powders often disappoint Physicians, either by vomiting too much, or not at all. The Effects of Antimonial Wines are very uncertain, because of the different Qualities of Wines. But the most excellent Preparation of this Kind is Emetick Tartar, which ought always to be given, diffolved in a proper Liquor, and not in too fmall a Dose; because if it is not strong enough to have the defired Effect, it will be apt to fatigue and torment the Patient with fruitless Nauseas and Reachings. Too great a Dose may likewise be dangerous, by exciting too violent Contractions in the Stomach, and Strainings of other Viscera, fo as to cause Spitting or Vomiting of Blood, long-continued Reachings without

without bringing up any thing, Convulsions, and Inflammations of the Viscera.

If from any Dose of Antimonial Preparations, either too violent or too long continued Vomitings should happen, the best Method is to drink a Glass of Water or Ptisane, acidulated with a few Drops of Ol. Sulphuris per Campanam, or Spirit of Vitriol; which will presently check the Emetick Quality of the Antimony, and stop the Vomiting much more

fafely than Opium.

While the Emetick works, the Patient ought to drink very plentifully either luke-warm Water, Whey, or Veal or Chicken Water, with a View both to dilute the Contents of the Stomach to be thrown up, and to make the Vomiting more eafy and less straining. On the other hand, Oils, and all fat Substances, check the Force of the Emetick too foon, and prevent the Dilution of the Contents of the Stomach, and are therefore to be guarded against.

Besides the Medical Uses of Antimony, it is employed by several Artificers, to give the Silver Sound to Tin, in casting Besls, making Metalline Specula, and Types for Printing, &c. It is likewise used by Goldsmiths in refining Gold, for when melted with that Metal, it destroys all other Metals that can be mixed with it, Silver it self not excepted, and

turns them to Drofs.

ART. II. Bismuth.

Blimuth, or Tin-Glass, named Bijmuthum Officins. Plumbum Ginereum Agricolae, Marcafita Argentea Quorund. is a Metallick, Fusible, but not Ductile Substance, very brittle and heavy, and distinguishable from Lead and Tin by its Colour, which is sometimes shining, like Silver; sometimes of a faint Purple; resembling the Regulus of Antimony, but

confishing of broader Laminæ, and staining the Fingers. It is prepared by Artists, by being first torrised, and then melted into a Regulus. It is often found in Silver Mines, and where-ever the Miners find Bismuth, they conclude they shall find Silver, and hence they call it the Proof of Silver. The Mines of Bismuth are in Bohemia and Misnia. Some pretend that it may be extracted from Cobalt melted into a Regulus, by a particular Process, but this is not certain.

Bifmuth feems to have been unknown both to the Greeks and Arabians; for the Arabian Marcasite was the Lapis Pyrites. It is very seldom used in Physick, though some prepare Flowers from it, which they say are Diaphoretick; but most Physicians have been afraid to use it inwardly, because of the Arsenical Parts contained in it. The Magistery of Bismuth is prepared by dissolving the Metal in Spirit of Nitre, then precipitating it with a Solution of Sea-salt in Water. This Precipitate, being edulcorated by frequent Lotions, becomes a very white Powder, much valued by the Ladies as a Cosmetick, and much used by Dealers in Hair to improve the Colour of it when Dark or Red. Pewterers mix it with Tin to harden it, and give it a more shining Colour.

ART. III. Zinch.

ZINCH, named Zinchum officin. Zinchum seu Marcasita Pallida Schræderi, Zinch vel Tutenague Gallor. is a Metallick Sulphureous heavy Substance, resembling Lead in Colour, susible and ductile to a certain Degree, being very hard to break, inflammable, and volatile. It seems to have been quite unknown to the Antients, and even the Moderns knew very little about its Nature or Origin, till M. Stabl, now First Physician to his Prussian Massetty, explained it in his Dissertation De Metallurgia.

which

It is extracted from the Lead Oar of the Mines of Goffelaar, which Oar is very hard to melt, though it appears neither stony nor barren to the Eye, but rich and shining. Three Substances are separated from it; Lead, Zinch, and a Kind of Cadmia Fornacea, which being melted with Copper, makes a

Prince's, or Bath Metal.

The Furnace, in which this Oar is melted, is fo disposed as to have the Side and Back Wall of Brick, but the Forefide is shut by Plates of a greyish fiffile Stone, about a Finger's Breadth in Thickness. During the Time of the Fusion, this Foreside being much thinner than the rest remains considerably cooler; and they increase this Cold by often sprinkling it with Water, and covering it with wet Cloths. The Oar, which is put in the Furnace at one Time, is about twelve Hours in melting; and as foon as the Fusion is begun, Bellows are set a blowing upon it, by which the Zinch mixed with the Lead is driven in Form of Flowers or Vapour against the Brick Walls, to which it sticks, to about the Thickness of a Writing Pen, and of the Confiftence of very hard and half-vitrified Grey Tartar. At proper Intervals of Time, they open the Furnace and beat this Substance off from these Walls, because otherwise, it would in time become fo thick as to make the Capacity of the Furnace too fmall for Use.

On the front, or stony Part of the Furnace, is found not only a Substance like that just mentioned, in Form of melted Stone, but also another resembling melted Metal, with Streaks of a Substance halfburnt, or reduced to Ashes, running through it. Therefore at the End of each Operation, or Period of Melting, having removed the burning Coals from the Bottom of this Part of the Furnace, they fubstitute others in their room, reduced to small Pieces, and not burning. Then, by repeated Strokes of Hammers, they shake the Wall; and the Zinch

P 2

which sticks to it runs down between the Laminæ of the half burnt Substance in Form of a melted Metal, emitting a white lucid Flame, and in a few Minutes Time would all sly off in a whitish or asheoloured Vapour, if it were not received and extinguished by the Coal Dust placed under it; for as soon as it mixes therewith, the Flame ceases, and it hardens into a Metal. When it is cold, they remove it, separate it from the Coals, and having melted it again over such a gentle Fire as is sufficient to melt Tin, it is cast into proper Masses or Pigs.

The Advantage to be made of this Metal is very uncertain, because sometimes the Workmen lose all their Labour employed about it, either because the Heat has been too great, the Bellows have been blown too fiercely, or through some other Neglect.

That Part, which sticks to the Brick Walls, from whence it is broke off at proper Intervals, as has been said, makes the Cadmia used in Prince's Metal; but before it is fit for that Use, it is mixed with the Scoriæ and other Resule of Metals, and exposed in Heaps for a long Time to the openAir; where being penetrated to some Degree by the Air, or something contained in it, it rarifies a little, and swells; and then it becomes fit to communicate a Gold Colour to Copper, by being melted with it. This Substance is called, very properly, Cadmia Fornacea by M. Stabl; for though its Origin be different from that of Tutty, the Cadmia Fornacea of Agricola, yet its Nature and Effects are nearly the same, for both equally give a yellow Colour to Copper.

The Lead is found melted at the Bottom of the Furnace; and the Workmen are of opinion that no Part of the Zinch remains in it, because they think the Fire, to which the Lead continues so long exposed, is more than sufficient to evaporate

all the Zinch.

Zinch is a metallick Substance, but sulphureous and perfectly Volatile. M. Homberg observed long ago, that when thrown into a red-hot Crucible, it emitted many Fumes; and when stirred with an Iron Rod, it prefently took Fire, and a white shineing Flame appeared like that which is feen by firing a Mixture of Nitre and Sulphur. At the same Instant, the whole Cavity of the Crucible was filled with very fmall, white, light, fmooth Filaments. like Threads of Cotton, or of a Cob-web. If thefe Filaments be carefully collected, and afterwards the remaining Zinch be stirred in the same manner as before, this Operation may be continued fo long, till almost the whole Substance of the Zinch shall be converted into these Filaments or Flowers. By macerating these Flowers in distilled Vinegar, M. Homberg prepared an inflammable Oil of very great Subtilty, which he judged to arise from the Zinch; but I should rather think was owing to the distilled Vinegar. The white Flowers taken inwardly are Sudorifick, and fometimes purge both upwards and downwards, being given from four to twelve Grains. Externally applied, their Effects are in nothing different from those of Pompholyx or Nibil Album of the Shops. They dry very powerfully, and without Acrimony; and gently aftringe and confolidate, They are much recommended by Barbette as a fure Remedy in an Ophthalmia, and Flux of sharp Lymph, being dissolved in Rose-water; by another in Fiffures of the Nipples, being fpread on a fine Linnen Rag; and by Emanuel Koning, in Ulcers, arising from a long Confinement in Bed. They are likewise of Service in drying Ichorous Ulcers.

Of Zinch and Copper melted together is made the finest Kind of Prince's Metal, so called from Prince Rupert, who is said to have invented it. It is made in this manner:

P 3

Take of Copper, three Ounces; melt it in a Crucible, and while it remains in Fusion, add an Ounce and half of Zinch. Mix them well, and then immediately remove them from the Fire. The Mass, when cold, will be of a beautiful Gold Colour, and in some degree Dustile.

The Pewterers use Zinch in whitening and purifying Tin, mixing it in the Proportion of one to fix hundred.

ART IV. Cinnabar and Quicksilver.

THE Name Cinnabar was in Diascorides's Time given to feveral Substances; but it then properly fignified a very red Substance, brought from Africa, of an astringent Quality; which, as Diascorides relates, was believed to be the Blood of the Dragon; and Matthiolus with good Reason suspects to be the fame with that Gummy or Refinous Juice, still called by that Name in the Shops. The fame Word was likewise applied to the Minium of the Ancients; or to that mineral Substance of a shining red Colour, from which Quickfilver was extracted; and in aftertimes, the two Words Cinnabar and Minium were used indifferently. At length, as the true Minium was not commonly found, and confequently often adulterated with Lead Oar calcined to Redness; that calcined Substance was alone called by the Name of Minium, and the Word Cinnabar appropriated to the other red Substance, from whence Quickfilver is extracted. These Names I shall here use in this common Signification; and accordingly I divide the Cinnahar of the Shops into native and factitious.

The native or fossil Cinnabar of the Shops, called Minium by the ancient Greeks, and Anthrax by Vitruvius, is a fossil, metallick, heavy Substance, not very hard, found sometimes pure, and sometimes

mixed with Stones. Of the pure Cinnabar, there are feveral kinds; one of a Purple Colour inclining to Red, but which, by grinding, turns to a very beautiful Red; another of a blackish or Liver Colour, refembling the Lapis Hamatites; and a third of a yellowish Colour, which is commonly so rich in Quickfilver, that, when heated in the least Degree, the Metal drops spontaneously from it.

The other kind of native Cinnabar is found in a fiffile Stone formed of Laminæ, of an Ash Colour. It has been likewise found in a white metalline Stone, and fometimes in Form of a Gold or Silver Pyrites, fuch as was dug up some Years ago in several

Places of Normandy.

Native Cinnabar is found in Hungary, Bohemia, Italy, Spain and France; and every one knows of what Parts it is composed. Quickfilver is obtained from it, by distilling it either with Quicklime or Filings of Iron; and Sulphur may likewife be had in a small Quantity, by boiling it in strong Lixivia, and then pouring distilled Vinegar into the Decoction, the Quickfilver being first separated. Besides, a Cinnabar may be made by Art, exactly refembling the native Sort, by only fubliming Sulphur and Mercury together, in the manner that shall be hereafter related. The native Cinnabar, of which Painters of old were extremely fond, is now feldom used by them, because the factitious Sort is cheaper, and answers all their Purposes equally as well. The internal Use of it is recommended by some Physicians in the Epilepfy, Vertigo, Madness, and all spasmodick Affections. In these Cases, they choose that of Hungary or Carinthia, which is of a sparkling red Colour, and free from all heterogeneous Particles; and reject the dark or yellowish Kind, as being more impure. Sometimes, however, native Cinnabar, by means of some vitriolick, or even arienical Particles affociated with it, happens to excite Naufeas. P 4

feas, Vomitings, Anxieties, Heart - burns, &c., which I have myfelf, oftner than once, been a Witness to, even after the Cinnabar had been purged by frequent Washings; and therefore I always prefer either factitious Cinnabar, or that of Antimony, to the Native.

The factitious Cinnabar of the Shops, or Vermilion, is a red, heavy, dense Mass, friable, and marked with Silver or shining Streaks, consisting of Sulphur and Quickfilver, united by the Art of Chemistry. How this is done shall be presently shown; But we must first consider Quickfilver, as being one

Part of the Composition.

Quickfilver called Hydrargyrus, sive Argentum Vivum Officin. Hydrargyrus Græcor. Mercurius Chemicor. Argentum fusum Theophrassi. Argentum Mobile Aristotelis. Vomica Liquoris Æterni Plinii, and Zaiba or Zaback, of the Arabians, is a fluid metallick Substance, cold to the Touch, of a shining Silver Colour, very heavy, volatile, and which will unite with most Metals, especially Gold; to which it joins itself very closely.

Quickfilver is found fometimes in its fluid Form in the Bowels of the Earth; and in that Case, it is first well washed with Water, to clear it from Earth; then sometimes with Vinegar and Salt, to carry off all other metallick Parts; and lastly, it is passed thro Cotton or dressed Leather, and then

has the Name of Virgin Mercury.

It is likewise found in Glebes, or in Form of a red sulphureous mercurial Mineral, called *Cinnabar*, or of a stony Glebe, sometimes red, sometimes yellowish, sometimes dark, and sometimes of a Lead Colour.

From these Glebes, Quicksilver is extracted by simple Distillation sometimes per Ascensum, the Mineral being put in Retorts, and set in a strong Degree of Fire, by which the Quicksilver is rais'd in Fumes,

part

part of which sticking against the Neck of the Retort, are there collected and run down into the Receiver, and the rest are condensed directly in the Receiver; which, for this purpose, is half filled with Water.

The other Way of Distillation is per Descensum, which is performed in this manner, and is the most Expeditious, where the Mineral is rich. The Mineral, being beat fmall, is put into Earthen Veffels with very narrow Mouths, which are stopped with Moss fresh gathered from Trees. Other Earthen Vessels, like the former, but with wider Mouths, are buried in the Ground; and upon these the other full ones are inverted, their Mouths being let into those of the lower ones. In this Position their Necks are firmly cemented together with a proper Lute, the lower Vessels being wholly under Ground, the upper wholly above Ground. An Area of a fufficient Extent being thus filled, a Fire is lighted round the Vessels, by the Heat of which the Quickfilver drains through the Moss, out of the upper Veffels into the lower. At a proper time, they dig these up, and pour the Quickfilver into Bottles.

The Quickfilver Mines in Hungary, Carintbia, and Friuli, are very rich; there are also some such Mines in France, especially about Montpelier, and

in some Places of Normandy,

When the Cinnabar contains a great Proportion of Sulphur, the Quickfilver cannot be extracted without adding fomething to abforbe the Sulphur, and fet the Quickfilver at liberty, and render it fluid. Such Additions confift in Wood-ashes, Pot-ash, Quick-lime, Filings of Iron, and the like, with which the Mineral is to be distilled.

Quickfilver is the heaviest of any known Metal, except Gold, which is to Mercury nearly as four to three, and therefore finks in it, while all other Metals swim. Quickfilver may likewise be mixed or amal-

gamated,

gamated, as it is called, with all other Metals and metallick Substances, but most difficultly with Antimony, Iron, and Copper. It penetrates Metals, dissolves and makes them brittle; whence it is by some reckoned the first Matter of all Metals, but without any sufficient Foundation. It is therefore to be reckoned a metallick Substance sui Generis, sluid, heavy, divisible into very small Parts, and extremely volatile. Fire separates it into a very substle Vapour, and in that Form dissipates it intirely; whence Alchemists have given it the Name of the Runaway Slave. It is likewise easily disguised many ways, and may again be restored to its pristine Form;

whence it has got the Name of Proteus.

It readily unites with Sea-falt, and thus joined a very gentle Heat fublimes them in Form of a white, faline, crystalline Mass, known by the Name of Corrofive Sublimate. It does not fo eafily join with Nitre or Vitriol. It is more eafily diffolved by the Acid of Nitre, but very difficultly by Oil of Vitriol. Alcaline Salts work no Change in it; but it is in some measure fixed and extinguished by sulphureous Salts. By long Trituration with Sulphur, it is changed into a very black Mass; which being fublimed by the Force of Fire becomes an intenfely red shining radiated Mass. When Quicksilver has been diffolved by Spirit of Nitre, and that Spirit again evaporated by Fire, it remains in Form of a red Powder; but if the fame Solution be precipitated with Sal. Tartari, it appears a Saffron-coloured Powder at the Bottom. With Sea-falt, it gives a white Precipitate; with Lime-water, a yellow.

It is very difficult to analyse Quickfilver, because as soon as any considerable Degree of Fire is applied to it, it slies off, and thus bassless the Pains and Industry of the Artist. However, by being long exposed to a very gentle Fire, in a Glass Vessel with a very long Stem, it begins by degrees to be turned to

a greyish Powder, which by a long Digestion be-

comes yellowish, and at length red.

Thus reduced to a Calx, it is heavier than when fluid, and also a little more fixed in the Fire; but if it be urged with a strong Fire, it evaporates, leaving only a little fixed light Earth behind. If this Calx be burnt gently with Charcoal Dust, it turns immediately to running Mercury. By long Trituration, it may likewise be reduced to a greyish Powder, fome Particles detached from the Body, with which it is rubbed, hindering the immediate Contact of its Particles. When exposed to the Focus of a great Burning-Glass, it presently evaporates in Fumes, without leaving any Remainder; but if the Calx of Mercury calcined per se is thus exposed on a Tile, it first melts into a Substance like Glass, then evaporates fpeedily, leaving a fmall Quantity of a brownish Powder behind, which afterwards vitrifies. But if the fame Calx be laid in the Focus of fuch a Glass on a Piece of Charcoal, it melts into Glass in the same manner, then runs on the Coal, and becomes again pure Quickfilver before it evaporates. Hence it feems evident, that Quickfilver confifts of a volatile, vitrifriable Earth and Sulphur, to which it owes its metalline Splendor and Fluidity; for when deprived of its Sulphur by Calcination, it loses both its Colour and Fluidity; but if these Particles of Sulphur be again restored to it, it recovers both again.

Quickfilver was by the Ancients ranked among Poisons. Diascorides ascribes pernicious Effects to it; and from his Authority no doubt it was that Galen reckoned it highly Corrofive; for he owns he never made any Trial of it himself. The Name of it is not found in Hippocrates, whence it is probable, that it was not in use in his Time. But before Avicenna it was used externally, tho' seldom internally, being still reckoned a Poison by most Phy-

ficians.

ficians. Astuarius ranks it, however, among Medicines; but Mesues applied it only for curing Cutaneous Diseases, though Avicenna observes that many had drank it without any bad Effect, and that it passed through the Anus unchanged. About two hundred Years ago, though it was still believed by fome to be poisonous, it began by many to be used inwardly; they having observed, as Fallopius relates, that it was given in that Manner by Shepherds to their Cattle to kill Worms, without any bad Effect; whence they concluded that it might be fafely given to Men likewife, and that therefore Crude Mercury was not to be reckoned a Poison. Thus Brassavolus and Carolus Musitanus tell us, they gave it to Children troubled with Worms, from two to twenty Grains, and always with fome Success; and that feveral Midwives gave it to Women in difficult Labours, without any bad Confequence, though perhaps not always with any visible good Effect. Matthiolus relates, that fome Women with Child drank each a Pound of Quickfilver to procure Abortion, without any bad Sequel; and it is commonly known that the Workers in Quickfilver take this Method to cheat their Masters of considerable Quantities, by first fwallowing it, and then voiding it with their Fæces, from which it is eafily cleanfed by simple Washing, It must, nevertheless, be owned that the Use of it, whether outwardly or inwardly, can never be long continued without Mischief; for the Miners, and others employed about it, though of the strongest Constitutions imaginable, seldom remain for four Years in that State, but are feized with Tremblings, and Palsies, and all die miserable. By an injudicious Use of it, whether outwardly taken, or inwardly, the Nerves are likewise affected, weakened, corrugated, and contracted; whence Tremblings, Spafms, Palfies, and too great an Attenuation of the Fluids, which

which often brings on a fatal Salivation, Ulcers in the Mouth and Throat, and incurable Loofeneffes.

Quickfilver, judiciously administred, is however undoubtedly a most excellent Medicine; it opens the Pores, fmall Veffels, and Ducts of the Glands; refolves obstructed Humours, attenuates those that are too thick and viscid, especially the Lympha, and dislipates Concretions, even in the remotest Parts of the Body. On all these Accounts it is found to be of fingular Service in Tumors, fwelled Glands, Schirrhous Spleen, Mefentery or Liver, Ganglions, Strumæ, and other fuch Difeafes. It likewise blunts the Acrimony of the Fluids, and hence performs Wonders in Venereal Tumors, Buboes, and Ulcers, in cutaneous Puftules, Scabs, and other Affections of the Skin; universal Remedies of the Preparatory, and especially of the Evacuating Kind, having not only gone before the Use of Mercury, but being continued along with it. For, as all these Diseases arise from a viscid Serum, become Caustick by a long Stagnation, if it be divided and reduced to a fluid State by Quickfilver, before a Paffage is prepared for it out of the Body, it must either exert its Efficacy on the Part where it was first lodged; or, by removing to other more noble Parts of the Body, bring on Symptoms more dangerous than the first. Therefore, before the Patient begins to take Mercury in any Form, his Body ought to be cautiously prepared by Bleeding, to leffen the Plenitude of the Vessels; by warm Bathing, and the Use of diluting Medicines, that the Humours may become more fluid, and the folid Fibres fofter; as also by Purging, that a Way may be opened for the Passage of the dissolved Humours out of the Body. These Passages are likewise to be kept open during the Time that Quickfilver is taken, left the Humours should be intercepted in their Course, and be turned a more dangerous Way; and the Patient ought to be kept warm,

warm, left Cold should stop or diminish infensible Perspiration, which ought likewise to be encouraged

by gentle Exercise.

Quickfilver, not only taken inwardly, but also by Unction, evacuates the Humours by Stool, Sweat, and infensible Perspiration; but the most common Method of its Operation is by the Evacuation of a mucous Saliva, whence it is termed a Salivation. This Way of Purging was entirely unknown to the Antients, and is thought the most effectual Remedy for venereal Diseases; for the Cure of which it was first used by Jacobus Carpensis, a Physician of Bologna.

From whatever Country Quickfilver is brought, that is thought the best which is most pure, of the most shining white Colour, most sluid, and which being evaporated leaves no Remainder behind it. That is to be rejected which is of a livid or pale Colour, which does not run into Globules exactly spherical, but oblong, resembling little Worms or Tears, which are sure Signs that it is adulterated with Lead,

Bifmuth, or fome other Metal.

Native, or Virgin Mercury, ought always to be purified before it is used inwardly, because it is possible it may be still mixed with some metallick, sulphureous, or arsenical Particles. The most simple Way of purifying Quicksilver is, by passing it through dressed Leather, by which it is purged from the more gross Parts that may be mixed with it. Some wash it with Vinegar and Salt; but it is much safer to distill it in a Retort with Quick Lime, Potash, or Filings of Steel, by which Method Mercury is obtained more pure than by any other.

Mercury is used in Physick, either Crude, that is, being only first purified, or differently prepared. Crude Mercury is given in Substance to kill Worms, from a Scruple to three Drachms; being first well rubbed with Sugar in a Glass Mortar, till it is dif-

folved into invisible Parts, adding a Drop or two of Oil of Sweet Almonds to keep it from returning to its native Form. Decoctions of Quickfilver are likewise much used, being made by boiling a Pound of Mercury in fix Pints of Water for an Hour. The clear Liquor is given both to Children and Adults for their common Drink. Quickfilver is a great Enemy to all forts of Vermin, as well as to Worms; and it suddenly kills or banishes them, being applied in an Ointment to any Parts of the Body

where they are found.

Crude Mercury is likewise given in very large Quantities in the Iliac Passion, even to two or three Pounds; and it very often succeeds in removing the Obstruction; but if the Obstruction be very great, so that the Mercury remains a great while in the Intestines, it may do them an Injury merely by its great Weight. To cure the Itch, Quicksilver Girdles are used with very good Success, when the Precautions above-mentioned are duly observed. The Quicksilver is to be beat up with the White of an Egg, till both are turned to a thick Froth, which is rubbed on a Cotton Girdle, and, when dry, is wore round the Loins.

Mercurial Ointments cure the Itch, and all Difeases of the Skin. It is used in the Emplastrum de Ranis cum Mercurio of Vigo, in the Unguentum Neopolitanum, and in Mercurial Pills, of which the best

Form, in my Opinion, is this:

Take good Rhubarb, Trochici, Alhandal, and Agaric, of each a Drachm; Scammony, and washed Aloes, of each a Drachm and half; of Quicksilver killed in Turpentine, half an Ounce; of Syrup of Peach-Flowers, a sufficient Quantity to make a Mass of Pills. The Dose is from a Scruple to a Drachm and an half, in Venereal Complaints, Rheumatisms, and Obstructions of the Mesentery and

and Viscera. In the Pox these Pills are taken by some every Day, or every other Day.

No Substance has been treated in so many different Manners by Chemists as Mercury, both for Medical and Alchemical Uses; for fince they believed it to be the First Matter of all Metals, they have left nothing untried to fix it; but, though after all their Labours, they have not been able to gain their proposed End; they have, however, enriched the Materia Medica with many excellent Remedies. It is here to be observed, that some Chemists call the Preparations of Mercury, either by the Names of Oils or Salts, which are not to be looked upon as Principles or Substances extracted from that Metal, but as faline or oily Bodies mixed with it; for hitherto no Art has been able to reduce Mercury to its first Principles; for, being extremely volatile, it flies off, before any thing of its Texture can be discovered.

The most common Preparations of Mercury are Mercurius Pracipitatus per se, red, white, and yellow Precipitates, which last is named Turbith Mineral, Violet or black Precipitate, Æthiops Mineral, Factitious Cinnabar, Corrosive Sublimate, Mercurius Dulcis called Aquila Alba, and the Mercurial Panacea.

Mercurius Pracipitatus per se, or the Calx of Mercury, is made in this manner:

The Mercury first well purified is put into a flatbottom'd Glass, called Vas infernale, which being set in a Sand-heat, the Fire is gradually increased, and the Metal turns first to an Ash-coloured Powder, and at length becomes very Red. It causes Vomiting, purges downward, and provokes Sweat, being given from two to six Grains. Red Precipitate is made By dissolving four Ounces of crude Mercury, in a sufficient Quantity of Spirit of Nitre. The Solution is evaporated to Dryness in a Sand-heat; and the remaining Mass is of a pale yellow Colour, which by increasing the Fire to the third Degree becomes red like Coral, and is thus kept for use. It is employed externally in eating away fleshy Excrescences, or Pustules; for being sprinkled upon any Plaister, or mixed in an Ointment it corrodes mildly and without pain. Some Chemists distill Spirit of Wine, well restified, from this Precipitate; and this Operation being several times repeated, the Medicine becomes the Arcanum Dulcificatum; and may safely be given inwardly either with Purging or Diaphoretick Ingredients, both which it assists. The Dose is from two to six Grains.

White Precipitate is made By dissolving two Ounces of Quicksilver in three Ounces of Spirit of Nitre, in a Glass Vessel, in a Sand-heat. In another Vessel, half an Ounce of Sea-salt is dissolved in six Ounces of common Water. And then the two Solutions being mixed, the whole becomes turbid, and the Mercury falls to the Bottom of the Glass in Form of a white Powder, till the Liquor becomes Limpid, which then is to be gently pour'd off.

This Powder taken inwardly purges downward, and fometimes vomits; and being used for a Continuance of time, it will bring on a Salivation. It may be given from four to fifteen Grains. When applied externally in Ointments and Pomatums, it cures all Diseases of the Skin, and may be mixed with these in the Proportion of a Drachm to an Ounce.

Yellow Precipitate, or Turbith Mineral, is made By dissolving four Ounces of very pure Mercury in fixteen

fixteen Ounces of Oil of Vitriol. Distill this Solution in a Retort, till only a white Mass remains, which being powdered and edulcorated by frequent Washings with warm Water, becomes yellow, and is then dried and kept for Use. It is a very strong Emetick and Cathartick, and is chiefly used in Venereal Complaints, from two to six Grains.

Green Precipitate is made thus: Take of pure Mercury, four Ounces; of thin Copper-pltaes, an Ounce. Dissolve them separately in Spirit of Nitre, then mix the Solutions, and evaporate to Dryness. The remaining Mass being reduced to Powder is digested with distilled Vinegar, poured on it to the Height of six Fingers Breadth above it. When the Vinegar is tintured green or bluish, it is poured off, and more put in its Place, as long as the Mass can communicate any Tinture. Then all these Tintures being mixed together are evaporated to the Consistence of Honey; and this Substance when cool grows hard, and being reduced to Powder is kept for use.

It purges both upward and downward, and is reckoned by fome a Specifick in a virulent Gonor-rhæa. The Dofe is from two to eight Grains, to be repeated every Day, or every other Day, till the Running ceases. Others reckon it an unsafe Medicine, because of the poisonous Quality of the Copper.

The Violet or Black Precipitate, called by some Diaphoretick Mercury, or the Mercurial Panacea, is usually made in this manner:

Take of pure Sulphur four Ounces, and melt it in an earthen Vessel over a Charcoal Fire. Into the melted Sulphur throw, with great Care, six Qunces of very clean Quicksilver, stirring it constantly

fantly with an Iron Rod; and when they are perfettly incorporated, add four Ounces of Sal Ammoniac. Let this Mass be sublimed in a Glass Vessel; and mixing the Sublimate with the Faces, let them be again sublimed, and repeat this Operation four times; then separate the heavy blackish or bluish Mass, at the Bottom of the Vessel, from the other light, rare, yellowish Substance, which is of no Use.

This Precipitate is Diaphoretick, and much commended by fome in Rheumatisms, the King's-Evil, Venereal Difeases, Asthma, Epilepsies, for Killing Worms, and for Opening all Obstructions. The Dose is from twelve Grains to half a Drachm.

Æthiops Mineral is prepared with four Parts of pure Quickfilver, and three Parts of Flowers of Sulphur, by rubbing them in a Glass Mortar, till all the Globules of the Quickfilver disappear, and the Mass be reduced to a fine blackish Powder, which when kept some time turns very black. It is a Remedy for Worms, in the Venereal Difease, Itch and other Eruptions, and in the King's-Evil; and is likewife recommended for the Hæmorrhoids, the Gout and Rheumatism. The Dose is from fifteen Grains to two Scruples, and it fometimes is repeated Morning and Evening, a Cathartick being intermixed every fourth Day. It feldom raises a Salivation, but always promotes a Diaphorefis, and fometimes purges. Some make this Preparation by firing the Sulphur and Mercury mixed in equal Parts; but this burning is to no purpose:

Fastitious Cinnabar is made by Mixing slowly three Parts of Quicksilver with one Part of melting Sulphur, stirring it without Intermission till all the Mercury disappears. The Mass being then cooled, reduced

reduced to Powder, and put into a proper Vessel, is sublimed with a graduated Fire, into a red-streaked shining Mass, with has the same Virtues with Æthiops Mineral; and is sometimes ordered as a Fumigation to excite a Salivation in the Lues Venerea.

Corrosive Sublimate is speedily made in this manner:
Take any Quantity of pure Quicksilver, dissolve
it in Aqua Fortis, and distill the Solution to Dryness. With the remaining saline Mass, mix four
Parts of decrepitated Sea-salt, and sublime in a
Glass Matrass with a short Neck. What rises is
a white saline crystalline Body, called Corrosive
Sublimate, or the Poisonous Dragon.

When taken inwardly, it proves a corrofive Poifon, of the fame Nature with Arfenick; but the Symptoms it causes are quicker and more terrible. It suddenly corrodes the Throat, Stomach, and Intestines; and its caustick Force is to be weakened by the same Remedies, which were mentioned in treating of Arsenick. It is used externally to consume proud Flesh, and to deterge old Ulcers. The Phagedenick Water is made of it by dissolving half a Drachm in a Pint of Lime-water. The Solution is yellowish, and to be kept for use.

Of this Corrosive Sublimate is likewise made Mercurius Dulcis, called Dulcified Sublimate, Aquila Alba, the Dragon Tamed, and Calomel, in this manner:

Take of Corrosive Sublimate, sixteen Ounces; grind it throughly in a Marble-mortar, pouring in by slow Degrees twelve Ounces of crude Quicksilver, well purified. Continue to grind them, till the whole Quicksilver disappears, and then the Powder will be of a Leaden Colour. This Powder put into proper Glasses, to the Height of an Inch

or two, is sublimed by a slow gradual Fire into a white Mass, which being separated from the Faces, and powdered, is again sublimed.

This Preparation purges gently, divides all vifcid pituitous Humours, kills Worms, and is reckoned a fovereign Medicine in Venereal Diseases. The Dose is from fix to thirty Grains in Pills or a Bolus; and if the use of it be continued for several Days, it will raise a Salivation. It is most commonly mixed with other purging Medicines, and fome choose to give it in this manner every other Day, in order to cure the Pox without Spitting. It enters the Mercurial Pills, and the Aperient Cathartick Electuary of Charas.

The last Preparation of Quickfilver is the Mercurial Panacea, fo called from its extraordinary Qualities; and which may be justly named Panacea Ludoviciana, because the Secret was bought and made publick by Lewis the Fourteenth. It is made in

this manner:

The crude Quicksilver is purified by being first made into Cinnabar, and then extracted from thence in the manner already shown. Of this Mercury revivified from Cinnabar, is made corrofive Sublimate, which must be thrice sublimed; twice with Sea-falt, and once without any Addition. Part of this Sublimate is again reduced to running Mercury, by being distilled with Regulus of Antimony. Of this revivified Mercury, and the remaining corrosive Sublimate, is made Mercurius Dulcis, by nine Sublimations. Lastly, this Mercurius Dulcis is put in Digestion for three Weeks, with any aromatized Spirit of Wine, and afterwards separated from the Liquor, and dried for Use.

This

This is undoubtedly an excellent Medicine in all Venereal Affections; and is recommended likewise in Rheumatisms, Obstructions of the mesenterick Glands, King's-Evil, the Itch, Tetters and Worms. Some use it likewise for the Scurvy; but, in my Opinion, no Preparation of Quickfilver can be proper in that Distemper. The Panacea more readily falivates than Mercurius Dulcis, because this latter often passes off by Stool.

The following are approved Forms of giving Mercurial Preparations, in different Intentions:

Take of Æthiops Mineral, a Drachm and an balf; of Coralline in Powder, a Drachm; Oil of Tanfey, three Drops: Mix them, and make them into a Powder. The Dose of which is from fifteen to thirty Grains, to be given Morning and Evening, to kill Worms.

This Powder may be made into Pills or a Bolus with Syrup of Wormwood; and when it has been continued three or four Days, the following purging Bolus is proper to be given.

Take Mercurius Dulcis, Rhubarb, and Pulvis Cornachini, of each equal Parts; mix them, and make them into a Powder. Take of this Powder from one Scruple to a Drachm, Conserve and Syrup of Wormwood a sufficient Quantity to make a Bolus.

Take of Æthiops Mineral, balf a Drachm; Powdered Millepedes, and Gum Ammoniac, of each a Scruple; Conserve of Marigolds a sufficient Quantity to make a Bolus, to be taken every Day for three Days for the King's-Evil, and every fourth Day take the following purging Bolus:

Take

Fake Mercurius Dulcis, and Gum Ammoniac, of each fifteen Grains; Trochifc. Alhandal, ten Grains; Syrup of Peach Blossoms, a sufficient Quantity to make a Bolus.

Take of the Mercurial Panacea, a Drachm; of powdered Rhubard, three Drachms; Balfam of Capivi, half an Ounce: Mix and make an Opiate, the Dose of which is a Drachm, to be taken every Morning, purging every third or fourth Day with the Mercurial Pills above mentioned, or with the following:

Take Mercurius Dulcis, and Diagridium, of each a Drachm; Trochife. Alhandal, a Scruple: Powder them, and mix them with a fufficient Quantity of Turpentine to make Pills for five Doses.

Among all the Virtues of Quickfilver, that for which it is most celebrated is its Efficacy in curing Venereal Distempers, for which it is justly esteemed the only Specifick, by expelling the morbid Matter, together with a large Quantity of tough and viscid Lympha; for the Cure of these Distempers is never to be depended on, except it is brought about either by a copious Purging, or a Salivation. To raise a Salivation, some have Recourse to Mercurial Fumigations, some use Mercurial Plaisters or Ointments, others give Mercury inwardly, differently prepared.

To raise a Salivation by Fumigation,
The Patient being first duly prepared, is placed
naked in a proper Chair, or Stove, and small
Pieces of Cinnabar, to the quantity of two or three
Drachms, being thrown upon live Charcoal, the
Steam is received through the Pores of the Skin.
The Patient grows soon very warm, and sweats

more or less, in Proportion to his Strength. This Operation is repeated every Day, or every other Day, till the Gums begin to swell and ulcerate, and the Spitting rises to a sufficient Quantity.

Unction is thus performed:

The Patient, duly prepared, and properly cloathed. being placed near a Fire, the Parts to be anointed are first rubbed till they are warm and red, and then the Mercurial Ointment is applied, the first Day to the Feet, Knees, and Groins; the next Day to the Buttocks, Wrists, Arms, and Shoulders; and this Method is repeated every Day, or every other Day, according to the Strength of the Patient, till be spits plentifully, that is, to the quantity of three or four Pints a Day. He ought to be anointed in a warm Place, but at a little Distance from the Fire, lest the Heat should make the Ointment run too foon. About two Ounces of Mercurial Ointment is sufficient at each time; and, by being once rubbed, some Persons will be plentifully falivated. Others require three Rubbings; but seldom more. Before each Rubbing, the Patient's Throat ought to be carefully examined, to see if any Signs of a Salivation appear. These Signs are Heat and Dryness in the Mouth and Gums, fwelling in the salival Glands, frequent Spitting, an Inflammation in the Orifices of the salival Duets, Ulcers which gradually increase, and at length a copious Discharge of laudable Matter. Too plentiful a Spitting is very much to be guarded against, especially if the Salivation has been hastily raised; and if that should happen, we must prefently have recourse to Purging, which is to be repeated as often as is necessary, laying aside the Cloths daubed with the Ointment.

Some prefer Plaifters to Ointments; and it is certain, that the Effects of them are flower and milder. They are applied to the same Places, and with the same Precautions, as the Ointment. Others, in fine, are of Opinion, that a Salivation is most fafely raifed, and afterwards either increafed or diminished, as the Physician shall judge the Patient's Strength to require, by the internal Use of the Mercurial Panacea; and it must be owned, that both Fumigations and Ointments are hazardous and uncertain; for Fumigations sometimes affect the Head, and produce direful Symptoms; and Ointments raife fometimes too great a Salivation, fometimes none at all; because a greater or smaller Quantity of the Quickfilver enters the Blood, according as the Pores of the Skin are wider or narrower; and this can never be known but by the Event. But the Usefulness and Excellency of the Panacea confifts in this; that being given at first in small Doses, the Quantity of it may be increased at Pleasure, till the Patient spits the Quantity required; and this Quantity is either increased, diminished, or continued the same at the Pleasure of the Physician, without any Fear of Danger. The other Methods of Salivating are not however altogether to be rejected; for it is fometimes necessary to mix them with the Use of the Panacea. which being flow in its Operation, the Ointment is to be used once or twice in some Cases to bring the Spitting speedily to the defired Pitch. In Persons therefore of a very strong Constitution, the Salivation ought to be raised by Unction; and afterwards kept up by the Panacea; but in weak Habits, the Panacea alone is to be depended on; or, at least, with the Affiftance of only a few Plaisters. In Cases of violent continual Pains, Nodes, or Exoftofes, Plaisters are likewise to be applied; as in the pocky Itch, Herpes, Ulcers, Scabs or Puftules fpread over the Body, Ointments are most proper.

Lastly, Fumigations are usefully mixed with Unctions, or with the Panacea, when there are Ulcers, Verrucæ or Condylomata, in the Pudenda or Anus.

The Method of Salivating by the Panacea is this:

The Patient is first of all to be let Blood once or twice, according to his Strength, and the Fullness of his Vessels. The Day after the last Bleeding, be ought to take a purging Potion, and at a proper Distance of Time, such as two Hours or more, four Grains of Tartar Emetick dissolved in weak Broth. The next Day, he should go into a warm Bath, and repeats Bathing once or twice a Day for six or seven times.

By these Preparations the Prime Viæ are cleared of their gross Contents, the Vessels are relaxed, the Blood circulates more freely, the Juices become more fluid, and the solid Fibres softer or less rigid. We ought, however, to take care not to weaken the Patient too much, by Bleeding, or Bathing, less he become not able to bear a due salivation; neither are Catharticks to be repeated, because they retard the Spitting; for the Venereal Diseases may be cured by Purging, yet Salivation is much more safe.

The Patient's Body being thus prepared, the next Day after his last Bathing, he ought to take ten Grains of Panacea in the Morning, and five in the Evening; the second Day, sifteen Grains in the Morning, and eight in the Evening; the third Day, twenty Grains in the Morning, and ten in the Evening; the fourth Day, twenty-five Grains in the Morning, and fifteen in the Evening; and thus the Dose may be increased every Day from five to ten Grains, till the Quantity spit in twenty-four Hours amount to three or four Pints; or the Evacuations by Stool, are proportionable to that Quantity. No more Panacea is from thence to be given, except the

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Evacuations begin to leffen, before all the Venereal Symptoms disappear. In that Case, Recourse must again be had to the Panacea, beginning with the fame Dose which the Patient took last, and continuing it till we are affured of a perfect Cure. If after the Panacea is left off, the Salivation should increase, a Cathartick ought immediately to be thrown in, and frequently repeated at small Intervals. If during the Salivation, a Loofeness should happen with violent Gripings, and a Dysentery be apprehended, detergent, lenient and strengthening Clysters are to be exhibited. During the whole time of the Cure, the Patient's Nourishment ought to consist of Broths, Eggs, Panada, and other Spoon-meats, but of nothing folid.

The Panacea ought to be given in some proper Conferve, drinking a Draught of Broth after each Dose; and for three or four Hours afterwards, no kind of Nourishment should be given. When the Effects of the Panacea are quite over, the Patient ought to be purged two or three times, and then use a Milk Diet for a considerable Time.

Nothing can be with certainty fixed concerning the Quantity to be evacuated in a Salivation; for after the most copious Evacuations, some Patients have remained uncured; whereas others have been perfectly restored after a very slight Course. This therefore must be left to the Judgment of the Physician; as also whether the Patient has Strength to go through a Salivation, when the Venereal Difease is complicated with others. Thus in a Constitution inclining to a Hectick Fever, where the Blood being already too much diffolved, passes out of the Body in profuse Sweats; the Mercury by diffolving it still more, would undoubtedly evacuate it by all the Emunctories of the Body, and Life along with it.

In Scorbutick Affections, tho' the Juices are faid to be viscid and concreted, yet the Use of Quickfilver has often been fatal; because as in these Diseases, the Salts in the Fluids are in greater Quantity and more Caustick, than in those of the Venereal kind, yet their Force and Energy is much weaken'd by the Lentor of the Fluids; but if, by the Use of Quickfilver, this Lentor is taken off, and the Juices made more fluid, the saline Spicula do then make very great Havock among the tender Membranes, by pricking and tearing them to pieces, whence follow those intolerable Pains, Hæmorrhages, Inslammations and Exulcerations, which arise from taking Mercury.

Quickfilver is faid to be a great Enemy to the Nerves, being thought to bring on Weakness, Tremblings and Palfies; but these Symptoms are not to be attributed to Quickfilver so much as to the injudicious use of it; for by giving it in very small Doses, the coagulated Humours are unequally dissolved, so that the concreted Portions which still remain, being hurried along by the more sluid Parts, enter the smallest Canals of the Body, and there stick and form Obstructions; which gradually increasing, both in Strength and Number, the Tone of the folid Parts

is weakneed and destroyed.

It has been often asked on what the falivating and antivenereal Virtue of Quickfilver depends. To explain this, fome have without Ground had Recourse to Acids and Alcalies; for in the Cure of Venereal Diseases, this Medicine acts neither as an Acid, nor as an Alcali, since it produces the same Effects, whether it be mixed with acid Salts, or be conveyed into the Blood persectly crude and unmixed, as by Friction and Fumigation. Neither is their Opinion probable, who say, that the Venereal Virus is an Acid, since the Saliva of those affected with this Disease discovers no Signs of Acidity, but on

the contrary shews itself to be of an alcaline Nature by turning Syrup of Violets green, raising an Effervescence with acid Liquors, and by corroding Copper. We are not therefore to imagine, that Quickfilver acts like an Abforbent or Alcali, by sheathing the acid Parts of the Virus, for other Abforbents would better answer that Intention. It is more probable, that all the Virtue aud Energy of Quickfilver depends on two Qualities, its great Divisibility, and the spherical Figure of its Particles; by which it is enabled to penetrate the most inward Recesses of the Body, infinuate itself between all Parts of the Blood and Serum, and divide all Concretions found therein; not only by preventing their mutual Contact, but by increasing their Fluidity, a fmall folid Sphere being interposed between each two larger Moleculæ of the Juices. Again, as these Moleculæ stagnate at the Orifices of the very small Veffels, with the Globules of Mercury between them, they are there fully exposed to the Force of the Solids, and of the circulating Fluids, and thereby divided and broke to pieces, so as to be capable of paffing through the smallest Canals of the Body.

Now, when we confider those Emunctories of the Body, which are capable of transmitting a thick viscid Lympha, we find them all reducible to the intestinal and falival Glands; for those of the Kidneys and Skin give Paffage only to the finer Parts of the Lympha, because of the Smallness of the Veffels, of which they are composed; and, hence it is, that fudorifick Medicines have not a fufficient Effect in Venereal Complaints, because they drive through the Pores of the Skin only the thinner Parts, leaving the more thick and viscid behind, which they cannot diffolve; but the falival and intestinal Glands are capable of fecreting these more concreted Parts. Therefore on taking Mercury, both or either of these Emunctoris transmit this viscid Lympha, according as

it is found in the Body in greater or smaller Quantities. This Excretion is made most commonly and most copiously by the salival Glands, because they are most exquisitely sensible. But when the Lympha to be evacuated is very acrid and capable of irritating and stimulating even the intestinal Glands to a sufficient Degree, it passes off likewise by these; so that the Determination of this Lympha to both, or to either of these Emunctories, depends on its Acrimony; and for this Reason it is, that when the Irritation of the intestinal Glands is very much increased by a Cathartick Medicine, the Excretion is chiesly made that way, and the Salivation decreases or may be totally stopped.

Several Ointments and Plaisters are made with Quickfilver, of which take the few following In-

stances:

Take of Quickfilver revivified from Cinnabar, two Ounces; Venice Turpentine, half an Ounce; grind them in a Mortar, till the Quickfilver is extinguished; then add, by degrees, of fresh Lard, four Ounces; mix them well together for an Ointment in Venereal Cases. Take of the Mass for the Emplast. Diachyl. Simpl. twelve Ounces; melt and mix with it of Quickfilver killed by Turpentine, four Ounces, to make a Plaister; which being applied to the Parts above-mentioned, will raise a Salivation.

Besides the Medical Uses of Quicksilver, it is imployed in several Arts, such as Gilding of Vessels, Making of Looking-Glasses, &c. but the far greatest Quantity of it is consumed in purifying and refining Gold and Silver.

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SECT. VII.

METALS,

A Metal is a hard shining Mineral Body, fusible by Fire, concrescible by cold, ductile, and capable of amalgamating or being intimately united to Quickfilver. Metals are divided into base or imperfect, and noble or perfect. Imperfect Metals are those which lose, much by being exposed to Fire, fuch as Lead, Tin, Iron, Copper, and they are termed Base, or Ignoble, as being not much efteemed. Perfect Metals are those which undergo all Trials by Fire without any fenfible Lofs, fuch as Gold and Silver; and thefe are called Noble, as being highly efteemed and greedily fought after by every Body.

CHAP. I.

Of Imperfect Metals.

ART. I. Lead.

E A D, named μόλυβδος in Greek, or Plumbum in Latin. Plumbum Nigrum Plinii. Raphat Arab. Saturnus Chemicor. is a fost, heavy Metal, of fmall Value, of a livid Colour, staining the Hands black, very little fonorous, and melting by Fire, before Ignition. The Greek Authors often use the fame

fame Names indifferently to express Lead and Tin, and the Latin Interpreters have rendered the Greek Kawitsels, both by Plumbum and Stannum. Pling, however, fays that Term means only what he calls Plumbum Album, which he makes to be different from Stannum; which, according to him, is a kind of Plumbum Nigrum, found in the same Veins with Silver. But either this Distinction of Pling between Plumbum Album and Stannum is groundless, or the Stannum of the Antients was nothing but the purer and most shining Part of Lead, or a Mixture of the Plumbum Album and Nigrum, or of the Plumbum Nigrum and Silver. Agricola mentions three Kinds of Plumbum; one White, which we now call Tin; one of an Ash Colour, which is our Bismuth; and a

third Black, which is our Lead.

Lead is feldom found pure in the Mines; but is got from different Veins or Oars, which confift in fome Mines of a black, yellow, or ash-coloured Earth, fometimes full of Spangles; in others, of a red or white Rocky Stone, in which the shining Lead is feen in fquarer Cheques; in others it is found mixed with white, yellow, or green Fluors. Lead Oar contains almost always some Quantity of Silver, and in some Parts of England from two thousand Weight, they extract ten, fifteen, or twenty, Pounds of Silver. There are many Lead Mines in Spain, Italy, and Germany; neither are they wanting in France, but it is difficult to extract the Metal from the Oar. The richest in Europe are in England, where the Oar is disposed stratum super stratum with Charcoal, which being fet on Fire, the Metal runs out. Sometime instead of Charcoal they use Pieces of Wood, and sometimes they mix them together, according to the Degree of Fire which is required; for a Charcoal Fire is more intense than a Wood Fire. Agricola relates, that from the Lead Pyrites, which contain likewife fome Quantity of Silver,

Silver, a white Metal flows first of all, supposed to be a great Enemy to Silver, because it burns and destroys it; next to that comes the *Plumbum Nigrum* mixed wth Silver, which by Miners is called *Stannum*. This *Stannum* being exposed to a stronger Fire, the Lead is turned into a kind of Litharge, or *Plumbago*, the pure Silver remaining behind; and that Litharge, or *Plumbago*, being afterwards melted with Charcoal, the pure Lead presently separates, and runs down.

The specifick Gravity of I ead to that of Gold is, as Three to Five. This Metal is eafily burnt and reduced to an afh-coloured Calx, which by a stronger Degree of Fire turns Yellow, and then Red, being in that State termed Minium. By still increasing the Fire, this Substance melts into an Oily Fluid, which being exposed to the cold Air, concretes into a reddish or yellowish Mass consisting of several thin pellucid Lamina, foft to the Touch, though compact, which is termed Litharge. But if, when melted, an intense Degree of Heat be still continued. it wholly goes off in Fumes. If the Calx of Lead, Minium, or Litharge, be melted by throwing in burning Charcoal, or any other combustible Matter, they presently return to Lead. If Lead and Nitre are melted together in a Crucible, they flash a little, and if the Powder of Lead be thrown into the Flame of a Candle, it takes Fire, and turns the Flame blue. Hence it is evident that the fulphureous inflammable Principle is in Lead, though in a very fmall Quantity; and also that this Principle is not intimately united to the other Principles of which this Metal confifts, fince a very small Degree of Fire is able to separate them. Lead exposed on a Tile to the Focus of a great Burning Glass prefently emits copious Fumes; then by degrees is turned to Ashes, or to an ash-coloured Calx, which almost in an Instant turns Yellow and Red, and then melts into a faffron-coloured very fluid Liquor, which R

which afterwards foon vanishes in Smoak. But if, before this Evaporation, it be removed from the Focus, it hardens into a red or yellowish Mass, like Orpiment, consisting of thin Laminæ, pellucid like Talc. If this Talcous Glass of Lead be again exposed to the Burning Glass on a Peice of Charcoal, it presently melts and recovers the Form of Lead; but if a bit of pure Lead be put in the Focus in the same Manner on Charcoal, it melts, and at length is wholly diffipated in Smoak, no Glass remaining.

The Fumes thus arising from Lead, are properly the Flowers of the Metal, or the Ashes deprived of the fulphureous Principle; for if they be collected, and melted on Charcoal, they are presently reduced again to Lead, by Means of the Sulphur communicated to them from the Charcoal. From all which it is evident, that Lead is composed of a vitrisable Earth, of the Talcous or Foliaceous Kind, and of a sulphureous Principle, which must be contained in all combustible Bodies; and this inflammable Principle is not in any great Quantity, nor intimately, united to the Earth.

Lead diffolves all other Metals except Gold and

Silver, and carries them along with it, either in Fumes, or being turned with them into Litharge. Hence it is often used in refining Gold and Silver by the Cupel. It never contracts Rust by Moisture, like Iron and Copper, but is corroded by Acids, and dissolved by Vinegar, Spirit of Vitriol, and Spirit of Nitre, and the Salt remaining after the Evaporation of these Solutions has a sweet Taste. It is likewise capable of being dissolved by all oily and fat Substances. While it is turned into a Calx, though it emits copious Fumes, and consequently loses a considerable Part of its Substance, yet it increases in Weight, so that an Hundred Pounds of Lead

turned to Minium weigh Ten Pounds more than before; but if that Minium be again reduced to Lead, it will not weigh near an Hundred Pounds. Minium, melted with Sand, turns to a yellow Glass, like Amber.

From the excellent Virtues of this Metal, Paras celfus called it the Fourth Pillar of Physick. In itself, or without Preparation, it is cooling, incraffating, repellent, absorbent, and lenient. It is believed to be an Enemy to Venery, and undoubtedly calms Effervescences in the Blood, and checks the Progress of Inflammations, but is every way destructive to the Nerves. Taken inwardly, it loads the Stomach, gripes, and stops the Excretion both of the Fæces and Urine. It brings on Spasms and Tremblings, Difficulty of Breathing, and Suffocations; which direful Effects many have felt by drinking Wine recovered by Litharge after it has grown fowre. Hence it is reasonable to conclude, that Lead, and all Preparations from it, are much more proper to be used outwardly than inwardly.

Among these Preparations, we reckon, in the first place, those called Recrements, such as Cala, or Ashes, Minium, Litharge, Plumbum Ustum, and Cerus; and secondly, such Chemical Preparations as are used in Physick; such as the Vinegar of Lead, the Salt or Sugar of Lead, the Balsam of Lead,

and its Burning Spirit.

The Calx, or Ashes of Lead, and Minium, are thus prepared:

The Lead is melted over a Charcoal Fire, in a clean unglazed Earthen Platter; and the Fire continued till the melted Metal turns to a blackish or ash-coloured Powder, which is then called the Calx, or Ashes of Lead. By continuing the Fire a little longer, this Powder becomes yellow, called by the French Painters Massicot; and if calking the content of the content

cined in a Reverberatory Furnace, it becomes very red, being then called Minium in the Shops.

These Preparations of Lead blunt the Acrimony of the Humours, check Instammations, and deterge foul Ulcers, disposing them to cicatrife. Minium is used in the Unguentum Rubrum sive de Minio, in the Emplastrum pro Fracturis, Emplastrum Stypticum, and Emplastrum Matricale of Charas. I have already observed that the Minium of the Antients was different from that of our Shops, the first being native Cinnabar, the other Lead calcined by a very strong Fire.

Litharge, Lithargyrus five Spuma Argenti Officin. was of two Kinds among the Greeks, differing only in Colour. One was Yellow, called Chrysitis, or Lithargyrus Auri; the other White, called Argyritis, or Lithargyrus Argenti; and the same Distinction is still kept up. It is commonly made in those Furnaces in which Lead is separated from Silver, or where Silver is refined by Lead from the other Metals mixed with it.

When the Workmen design to separate Silver from the Lead or Copper contained in the same Oar with it, they First make a kind of Trough of Bone-Ashes, in which they melt a great Quantity of Lead; and into this melted Lead they throw the Silver Oar to be purified, and continue to blow with Bellows till all the Lead, mixed with the Copper, or Lead, contained in the Silver, swims on the melting pure Silver, like Oil. Then they gradually blow this Lead toward the Sides of the Trough, and afterwards cutting these Sides, the Vitrified Lead runs down to the Ground, and there becomes Litharge, sometimes of a Gold, sometimes of a Silver Colour; whence the Dealers in these Commodities

Commodities have given out that the one was made from Silver, the other from Gold; whereas the Difference confifts only in having been more or less exposed to the Fire, or in having a greater or less Mixture of Copper.

Litharge therefore is nothing but vitrified Lead. either alone, or mixed with Copper; it is frequently used in Physick in outward Appplications, being mixed with oily Substances to make the Basis of most Plaisters, by reason of the Emplastick Consistence, which this and other Recrements of Lead acquire by being mixed and diffolved by Oils. It is of a drying, detergent, and gently aftringent Quality; and for this Reafon is used in incarning and cicatrifing Ulcers. It is prepared by being well levigated in a Mortar with clear Water, till all the Lead which is not perfectly calcined, or other Metallick Fæces, fall to the Bottom, leaving the finer Parts incorporated with the Water; which subsiding by Rest, are separated from the Water and dried. This pure Litharge is used in the Unquentum Nutritum, Desiccativum, Rubrum and Apostolorum; in the Emplastrum Palmeum, Diachylon Simplex & Compositum, Polychrestum, &c. of Charas, and in Plaisters and Ointments of many other Dispensatories.

Plumbum Ustum, Burnt Lead, is a heavy blackish Powder, made by laying thin leaden Plates, and powdered Sulphur, stratum super stratum, in a glass Vessel, and then calcining them by the Force of Fire, they being continually stirred during the Calcination, till they are reduced to a very sine Powder, which is afterward to be washed several Times in clear Water, and dried for Use. This Medicine is used to cleanse foul inveterate Ulcers, and to dispose them to cicatrise. It is an Ingredient in the Unguentum Diapom-pholygos.

The:

The Ceruss of the Shops is a kind of white Rust of Lead, made after this Manner:

Some very sharp Vinegar being in the Summer Time put into a wide mouthed Earthen Vessel, it is afterwards closely covered by a Plate of Lead; and in Ten Days, or thereabouts, the Plate will be dissolved, a thick Sediment remaining at the Bottom of the Vessel, which being collected and dried, and afterwards ground, is made into a Mass, and kept for Use.

Cerus's may likewise be made by Steeping Filings of Lead in Vinegar for about ten Days; or even by infusing leaden Plates, which must every now and then be scraped, then insused again, till they are quite corroded. All the Scrapings being collected are ground, and then made into a Mass with Vinegar.

Before Ceruss is used for Plaisters, Ointments, Eye-Waters, &c. it ought to be well prepared, and washed, and care ought to be taken that it be not adulterated with Chalk. It is more cooling, drying, and astringent than the other Preparations of Lead, and is used to good Purpose in Instammations and Ulcers. It is an Ingredient in the Trochisci Albia Rhasis, in the Unquentum Album or De Cerussa, the Unquentum Pompholygos, and Desiccativum Rubrum of Charas, and in his Emplastrum Polychrestum, and Emplastrum Nigrum.

The First Preparation of Lead is the Acetum Saturni, for making which,

Take any Quantity of well ground Cerus, and pour upon it, in a Glass Vessel, as much distilled Vinegar as will stand the Height of four Fingers Breadth above

above it. Digest them in a gentle Heat, shaking the Glass frequently, till the Vinegar turns sweet; then pour off the Liquor, and digest the Ceruss once more with the same Quantity of fresh distilled Vinegar, in the same Manner as before. Filtre the Solutions through Cap Paper, and so keep them for Use. This Vinegar, mixed with Oil of Roses, or any other Oil, and long stirred in a Mortar, becomes the Linimentum Nutritum, or Butter of Lead. It is proper for Itchings in the Skin, Tetters, or Ring-Worms, the affected Part being rubbed with it.

The Salt, or Sugar of Lead, is made by Evaporating the Vinegar to a Pellicle over a flow Fire, and then setting the remaining Liquor in a cool Cellar to crystallize; when all the Crystals are collected into one Mass, the remaining Liquor being poured off, this Saccharine Mass is dried in the Shade.

Though this Sugar of Lead is by some recommended to be taken inwardly, in Diseases of the Lungs, Spitting of Blood, Dysenteries, &c. yet, for the Reasons already given, it is much safer to confine it to Outward Applications. It is much used by Chirurgeons in Inflammations, Diseases of the Eyes, Erysipelas, &c. It blunts the Acrimony of the Humours, deterges Ulcers, and then dries and cicatrifes them. It is mixed in Waters, Ointments, and Plaisters. In a Gonorrhæa, accompanied with a violent Scalding, Saccharum Saturni, mixed either with Rose Water or warm Milk, may be injected with good Success.

The Balfam of Lead is made of One Part of the Sugar, and two Parts of Oil of Turpentine, which being well mixed are digested in a Sand R 4

Heat, till the Oil turns very Red. This Preparation is used for stubborn Ulcers, to correct sharp Humours, and Prevent Putrefaction.

The Burning Spirit and Oil of Lead, are obtained from the Sugar or Salt by Distillation, but the Virtues of these inflammable Substances are the same with those of Spirit of Wine, whatever Chemists may pretend to the contrary; for the Spirit is only the Spirit of Wine concentrated in the Vinegar disengaged by this Preparation, and the red Oil is likewise extracted from the Vinegar.

The Mineral Mummy of Lead of Poterius, is the Calx of Lead and Quickfilver amalgamated together, made in this Manner:

Take of Mercury revivified from Cinnabar two Parts, and one Part of Lead. Amalgamate them together, and continue to shake them strongly in an Earthen Vessel over a Charcoal Fire, till the whole is reduced to a black Powder. Bake this Powder in a Sand Heat, in a Glass Matrass, till it turns yellow, and keep it for Use.

This Mummy cures, in a very small Time, the Itch, Tetters, and other Diseases of the Skin, cleanses callous Ulcers, and dissolves the Callus, and dissipates Swellings in the Glands of the Breasts, being mixed in any Ointment or Plaister. It is likewise of service in Cancers, which are not arrived at their last Stage. It must, however, be cautiously and sparingly used, lest the Suppuration prove too great. But if a Carcinoma, for Instance, be not ulcerated, a Drachm of this Mummy, accurately mixed with an Ounce of Emplastrum Magneticum of Angelus Sala, and applied to the Tumor, will gradually dissolve it. But if there be an Ulceration, then a small Pencil of Lint

Lint dipped either in the Mummy alone, or mixed with Powder of Myrrh, is to be thrust into the Ulcer, the Emplastrum Magneticum, being applied upon it. By this Means the hard Tumor gradually resolves by a gentle Suppuration, and by proper Internal Remedies used at the same time, the Carcinoma is healed.

ART. II. Tin.

THE Word Stannum has been applied to feveral Substances, mentioned in the foregoing Article; but what we now call by that Name feems to me to be the same with the nantree's of the Greeks, or the Plumbum Candidum of Pliny. It is one of the softer, and more ignoble Metals, white, shining, something livid, brittle, and sonorous, especially when united to other Substances. Tin is found in several Countries, but the richest Mines are in the Counties of Cornwal and Devonshire, in England.

It is commonly got from a Stony Substance, sometimes black, fometimes yellow, and fometimes white. These Stones are in some Oars friable, in others fo hard that they must be broke to Pieces by Fire. In Cornwal, the Oar being first separated from the useless barren Stones is beaten to Pieces with Iron Hammers, a Stream of Water running continually through it during the Operation, by which all the Earthy Parts are washed away, the Metal falling to the Bottom. These Metalline Parts are afterwards ground by a Mill Stone, and then well washed with Water, to separate all Remains of Earthy Then, being well dried, they are thrown into a Furnace, and mixed with Charcoal, and melted by a ftrong Fire, kept up by continual blowing of Bellows. The melted Tin falls to the Bottom of the Furnace, and from thence runs out by an Opening made on Purpose into Moulds made of Sand, where

there Masses are so soft and so easily melted, that they cannot be worked without the Addition of about three Pounds of Copper and eighteen Pounds of Lead to an Hundred Weight of Tin. Various Substances are sound mixed with Tin Oar; one of the Arsenical Kind, called Mundic, is of a shining dark Colour, dyes the Hands black, and when exposed to the Fire, slies away in Smoak. Another is soft, and of a saponaceous Nature, readily soluble in Water, but after being thus dissolved it grows very hard, being a kind of Marle, which is often found to contain Stones, sometimes pellucid like Crystal, sometimes red.

Tin is the lightest of all Metals, its specifick Gravity being to that of Gold only as Three to Eight. It is eafily melted, and turns very foon to a whitish Calx. Being laid on a Tile in the Focus of a great Burning Glass, it emits a thick, roapy Fume, in great Quantities; leaving a rare white fine Calx behind, which being continued longer in the Focus turns to fmall Crystals, or thin pellucid Filaments. cannot be melted any more, without the Addition of forme other Substance, such as Charcoal, &c. by which it is prefently converted again into Tin, Filings of Tin thrown into the Flame of a Candle, will take Fire, make the Flame of the Candle blue, emit Smoak, and fmell like Sulphur mixed with Garlick. Hence it is evident, that Tin confifts of a Crystalline or Vitrifiable Earth, which alone is hardly fufible, and of a fulphureous Principle, mixed perhaps with some Quantity of an Arsenical Salt.

Tin is more eafily melted than any other Metal, and eafily adheres to them all; and on this Account is laid on Copper Vessels and Iron Plates, to preserve them from Rust. It likewise penetrates other Metals, hardens them, and makes them brittle; and it requires a great deal of Pains to separate it, when

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once mixed with them, whence it has been called by Chemists Metallorum Diabolus. It is soluble only in Aqua Regia, and a Solution of it tinges a Solution of Gold with a beautiful Purple Colour. A Liquor which will perpetually smoak, or, as is commonly faid, a Spirit fermenting with the Air, may be made from Tin in this Manner:

Take of pure Tin, one Part; of Quickfilver, three Parts: Mix them, and make an Amalgama, to which add four Parts of Corrosive Sublimate, and having mixed them well together, in as small a Time as can be, throw them into a Glass Retort, to the Neck of which a Receiver is to be fitted, and a Dish set under the Receiver full of cold Water. Then distilling with a Sand Heat, a pellucid Liquor rises first, next the Spirit with great Impetuosity, and last of all, White Flowers stick in the Neck and upper Part of the Retort. Then removing the Fire, separate the turbid Liquor, and keep it close stopped in Glass Phials; and whenever it is exposed to the open Air, it will break out in thick Fumes.

Tin is feldom used inwardly, though its Virtues are highly celebrated by some Authors in Diseases of the Lungs and Uterus; the Filings being taken in the Quantity of a Scruple or more, every Day for some Time.

The Principal Chemical Preparations of Tin are, the Sal Jovis, Antihesticum Poterii or Diaphoreticum

Joviale, and Aurum Mosaicum.

Sal Jovis, or the Salt of Tin, is prepared from the Calx of this Metal, exposed for two or three Hours to a Reverberatory Heat, with the strongest distilled Vinegar, much in the same manner as the Saccharum Saturm, It is recommended in Sussocations

cations of the Uterus, and other hysterical Affections, from two to fix Grains, frequently repeated.

The Antibesticum Poterii is thus made: Take equal Parts of the best Martial Regulus of Antimony, and of the purest Tin; melt them together in a Crucible, and then throw them into a Brass Cone, well greased and warmed; separate the Scoriæ, if there be any, and under these will be found a Regulus Jovialis. Powder and mix well one Part of this Regulus with three Parts of pure Nitre, and throw this Powder by Spoonfulls, into an ignited Crucible, and calcine them together. Then let the Mass in Powder be thrown into a Veffel of warm Water, and edulcorated by frequent Washings, and afterwards dried. It will remain a white Powder, with a bluish Cast; the Dose of which is from half a Scruple to a Drachm, in bestick Fevers, Consumptions, Spitting of Blood, and in every faline Difposition of the Blood.

For the Aurum Mosaicum, Take of pure Tin, an Ounce; of Mercury, revivified from Cinnabar, ten Drachms; make an Amalgama, which being mixed with ten Drachms of common Sulphur and an Ounce of Sal Ammoniac, let the whole be very well rubbed and mixed together, then sublime them with a strong Fire for four Hours; a kind of Cinnabarine Substance will rise to the upper Part of the Vessels, a spungy Substance, of a Gold Colour, remaining at Bottom, which being washed in many Waters, is termed Aurum Mosaicum, and used both by Painters and Physicians. It is believed to be Diaphoretick, and is given from ten to thirty Grains, in hysterick and hypochondriacal Affections, and in Malignant Fevers.

ART III. Iron.

Common Iron, called zienges in Greek, Ferrum in Latin, and Mars by the Chemists, is an ignoble, very hard and fonorous Metal, which, when polish'd, is of a shining Colour, between white and livid; but when unpolish'd, of a black Colour. Iron is of two Kinds, common and purified. This last is termed Acies, Chalybs, or Steel. No Metal is fo necessary for the Uses of Life as Iron, nor is any Metal found in fo great Quantities, almost in every Country. There are many Iron Mines in France; but the German Iron and Steel is preferred to the French. It is dug out of the Earth in very different Forms. In some Mines, it is found pure, either granulated, or in Lumps; in others, it is met with in a heavy Stone, of a dark, vellow, or reddish Colour; or in a heavy yellowish or red Sand. Some Oars yield the pure Metal contain'd in them with little Trouble, requiring only to be broken into fmall Pieces, and fo to be melted with Charcoal in the space of a few Hours. Other Oars require a great deal of Labour to melt them; and also the Addition of Quicklime, Marle or Stones, to facilitate the Fusion. The melted Metal is run into large Molds, and there hardens into long thick Maffes. These Maffes are melted a second time, the flowing Metal being continually stirred with an Iron Rod; and when hardened, it is beat with great Hammers, till all the heterogeneous, vitrified, or burnt Parts are separated. Iron thus prepared may be forged into any Shape, by being first ignited, and then beat on the Anvil by Hammers. All Iron is not however of the same Goodness; the toughest is the best, and that which is most brittle of the least Value. This Difference does not proceed from the

Metal it felf, but from the Mixture of earthy and

vitrolick Parts.

Steel is made of Iron by frequent Fusion and Purification; and in the Iron of some Mines this Conversion is very easily obtained; in others, more difficultly; and accordingly the Ways of performing it are different. If the Iron be very good, it is melted in Furnaces, and to the melted Metal are added gradually equal Parts of Salt of Tartar, or any other alcaline Salt, Filings of Lead, and Shaveings of Bullocks Horns, the Metal being kept continually stirred. Afterwards the hardened Mass is beat into small Bars on an Anvil. But if the Iron cannot be thus melted, they take Bars of about an Inch Diameter, or less, and lay them stratum super stratum in a proper earthen Vessel, with a Mixture of equal Parts of Soot, Charcoal Dust, and Filings of Bullocks or Cows Horns, or Hairs. When the Veffel is full, it is covered and coated with a proper Lute, and fet in a reverberatory Furnace. The Fire is gradually increased, till the Vessel is red hot, and continues fo for feven or eight Hours. Then the Fire being fuffered to go out of itself, the Iron Rods are taken out changed into Steel. This is known by breaking them; for if the shining metalline Sparks are very fmall and very close together, through the whole Thickness of the Bar, the Steel is very good; but if they are at greater Distances from each other, and have visible Pores between them, the Steel is of less Value. Sometimes these Sparks are very close together near the Surface of the Bar, but more distant toward the Center, which is a Sign, that the Calcination was imperfectly made; and in that Case, the Stratification and Calcination is to be repeated, till the Change is thoroughly made.

Iron is the hardest of all Metals, and Steel is still harder and more rigid than Iron; if, being ignited, it be thrown into cold Water. Its specifick Gravity

is to that of Gold nearly as three to feven. Iron long Reeped in Water communicates to it a ferrugineous Taste, being dissolved by the Water and turned to a yellowish Rust. This Solution may be brought about in a little time, if the Iron be fucceffively wetted with Water, and then dried for feveral times; but if suffered to remain in the Water without being ever dried, it is a long time before it is corroded. This makes it fo difficult to preserve Iron from Rust; for which the best way is to rub it over with some oily Substance. Filings of Iron, laid in a Heap and sprinkled with Water, will grow fo hot as to fet Fire to Sulphur, if the Heap be large. By calcining Iron long in a reverberatory Furnace, it is reduced to a Calx, of a dark red, or purplish Colour. When ignited in a strong Fire, till it be near melting, and then beat by the Hammer, it throws off Scales, which are nothing but half vitrified Iron. When it is melted in the refining Furnaces, a Part of it mixed with the Charcoal, or other earthy Parts, runs into Scoriæ, which are a kind of Glass. This Metal is diffolved by all Acids. but left untouch'd by alcaline Salts. Filings of Iron thrown upon any Flame take Fire, and emit green or red Sparks. These Filings mixed with an equal Portion of Nitre prefently make an Ebullition, and emit copious Fumes of a fœtid Smell, then flash and deflagrate. If the Filings are put into Spirit of Sea Salt, or of Vitriol, a violent Effervescence and Fumes are raifed. The Fumes are intirely fulphureous, and if a lighted Candle be held to them, they flame immediately; fulminating and often breaking the Vessels. Iron exposed to the Focus of a great Burning Glass on a Tyle presently melts, emits Fumes, and then becomes a brittle half vitrified Substance. But if laid on a Piece of Charcoal in the fame Focus, it prefently melts, as before, and then flies wholly off in Sparks. If the half vitrified Substance

Substance just mentioned be exposed on a Piece of Charcoal, it prefently recovers the Form of a Metal. that is, the shining Colour and Ductility, and afterwards is wholly diffipated in Sparks. From thefe Experiments it is evident, that Iron confifts of a large Proportion of a bituminous Substance, which being united with a vitriolick Salt is involved in fo large a Quantity of Vitrifiable Earth, as difficultly to deflagrate with Nitre. That the vitriolick Salt is likewise in a considerable Quantity, is evident from the Solubility of Iron in Simple Water. from the Taste of the Water in which Iron has been diffolved, and from the Heat conceived by Filings of Iron sprinkled with Water, which arises from the Action of these Salts on the Metallick Earth. There is however fome Difference between the Sulphur contained in Charcoal, and that contained in Iron; fince Iron reftored by the Mixture of Charcoal-Sulphur, and exposed to the Rays of the Sun in the Focus of a Burning Glass, flies off entirely in Sparks. Iron therefore confifts of a bituminous inflammable Principle, a vitriolick Salt, and a vitriolick vitrifiable Earth. This Earth united with any inflammable Substance by Fire will become Iron, which accordingly happens in burning any inflammable Bodies, in the Ashes of which Iron discovers itself to the Magnet, though before no Signs of Iron are difcoverable in these Substances, even when reduced to the finest Powder.

Iron is the most useful of all Metals for Human Life; for besides the innumerable Kinds of Instruments made of it, it furnishes excellent Remedies in many Diseases. The Medicinal Virtues of Iron taken inwardly were not unknown to the Antients. Diascorides attributes to it an aftringent Virtue, and recommends it in uterine Hæmorchages. He likewise orders Wine or Water, in which a red-hot Iron has been quenched, in the Cæliac Passion, Lientery,

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and Dysentery, and for restoring weak Stomachs-Physicians do now acknowledge a two-fold Virtue in Iron, one Aperient, the other Astringent; for it is observed to cure a Suppression of the Menses, to open Obstructions of the Liver, Spleen, and other Viscera, to stop Hæmorrhages and Diarrhæas, and to strengthen the relaxed Fibres of the Intestines. On these Accounts it is reckoned the Grand Specifick in Hypochondriacal Affections, and all kinds of Chloroses. Some attribute an Aperient Virtue to some Preparations of Iron, and an Astringent Virtue to others; but the Truth is, all these Preparations are both Astringent and Aperient, though not in the same Degree.

For Medical Uses, Iron is preferable to Steel, and the Filings of Iron reduced to an Alcohol, or impalpable Powder, is preferred by many to all other Preparations in promoting the Flux of the Menses, and in removing Obstructions of the Viscera, being given from twelve Grains to half a Drachm; once or twice a Day, in Pills, Lozenges, or Boles.

Take of Filings of Iron, finely powdered, and passed through the Searce, half an Ounce; of powdered Cinnamon, half a Drachm; of the Mucilage of Gum Tragacanth, a sufficient Quantity to make Pills. The Dose of these Pills is a Scruple, to be taken in the Morning on an empty Stomach, and repeated four Hours after Dinner, drinking afterwards a Glass of Wine and Water.

Take of finely powdered Filings of Iron, an Ounce; of Cinnamon, a Drachm; of Cloves a Scruple; of white Sugar diffolved in any pleasant Simple. Water, and then boiled to the Consistence of a solid Electuary, four Ounces; Mix them together, and make Lozenges, the Dose of which is two Drachms Morning and Evening.

Take of fine Filings of Iron, two Drachms; of the Powder of dried Arnm Roots, three Drachms; Crystals of Tartar, two Drachms; Gum Ammoniac, Myrrh, Cinnamon, and Nutmeg, of each a Dram; Powder of Saffron, half a Drachm; Syrup of Wormwood, a sufficient Quantity, to make an Opiate or soft Electuary. The Dose of which is two Drachms, to be taken Morning and Evening in a Chlorosis.

Filings of Iron tied up in a Linnen Bag are likewife prescribed to be insused in aperient Apozems and alterative Broths; and Steel Wines are made with them in this manner:

Take of pure Filings of Iron, an Ounce; of any strong Wine, a Pint. Digest them in a warm Place for twelve Hours, shaking the Vessel every now and then. The Dose is four Ounces, to be taken twice a Day alone, or it may be mixed in Apozems and Ptisanes, in the Quantity of a Spoonful in each Draught.

Of the Filings of Iron and Tartar are made Steel Waters in the manner already mentioned in the Chap-

ter of Mineral Waters.

The medical Preparations of Iron are reckoned either Aperient or Aftringent. Of the first kind are the Crocus Martis Aperiens, the Salt or Vitriol of Iron, Riverius's Salt of Iron, soluble Tartar of Iron, the aperient Tincture of Iron, and the Flores Martiales. Of the second kind, are the Crocus Martis Astringens, and the astringent or antiphthisical Tincture of Iron.

The Crocus Martis Aperiens is the most simple and most excellent Rust of Iron, made by exposing Filings of Iron to the open Air in the Spring, till it be wholly turned to Rust by the Dews and Rains. This Rust reduced to a very fine Powder, is kept

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for use. The Dose is from ten Grains to two Scruples. Others prepare this Crocus with Sulphur in the following manner:

Take of Filings of Iron and powdered Sulpbur, equal Parts; mix'em together, and moisten them with Water, and make them into a foft Paste, which is to be laid on a Tyle, in a warm Place, for four or five Hours, to ferment. The Paste thus disposed, first begins to be bot, then gradually swells, cracks in several Places, emits Fumes, dries and calcines of itself. Then the Tyle, or earthen Dish, is fet upon live Coals, the Mass being continually stirred with an Iron Roa, till all the Sulphur is burnt away. The remaining Powder is of a purple Colour, called, Crocus Martis Aperiens cum Sulphure paratus. The Dose is from fifteen Grains to a Drachm.

The Salt or Vitriol of Iron is thus made:

Take of pure Filings of Iron, three Ounces; of Oil of Vitriol, four Ounces; and of clear Spring Water, ten Ounces. Digest them together, till the Iron is perfectly disolved; then let the Liquor being separated by Inclination from the Faces be evaporated to a Pellicle, and set in a cool Place to crystallize. The Crystals are of a green Colour; and these being taken out, the remaining Liquor is to be evaporated and crystallized a-fresh; and all the Crystals being first well dried are to be kept for Use. The Dose is from two Grains to a Scrupel, in a proper Vebicle. If given in too large a Dose, this Salt excites Vomiting. It is recommended not only as serviceable to open Obstructions, but to kill Worms.

Riverius's Salt of Iron is made, By digesting in an Iron Pot, set either in the Sun, or in some S 2

other warm Place, equal Parts of Spirit of Wine and of Oil of Vitriol. After standing for several Days, a saline Concretion is obtained, which is to be well dried, and kept for Use. The Dose is from half a Scruple to a Scruple. It opens Obstructions, strengthens the Viscera; and Riverius recommends the long-continued Use of it in hypochondriacal Affections, Chloroses, and Obstructions of the Liver and Spleen.

The Tinctura Martis Aperiens is thus prepared:

Take of rusty Filings of Iron, twelve Ounces; white Tartar, two Pounds; boil them in an Iron Pot with a sufficient Quantity of Rain Water, for twelve or sifteen Hours, stirring them sometimes with an Iron Spatula. Then strain off the Liquor, and evaporate it to the Consistence of a Syrup. This Tincture or Extract, as it may be called, is prescribed with Advantage in a Suppression of the Menses, Green Sickness, Dropsy, and other Diseases arising from Obstructions. The Dose is from one Drachm to two or more in alterative Broths, or any other convenient Liquor.

Tartarum Chalybeatum Solubile is made, By diffolving a in Pint of the Tintture last mentioned four Ounces of Soluble Tartar; and then evaporating the Solution to Dryness. The Powder that remains is of a saline Nature and dark Colour, and must be carefully preserved from Moisture. The Dose is from ten Grains to a Drachm, in a proper Vehicle.

The Flowers of Iron called likewise Mars Diaphoreticus, or Flores salis Ammoniaci Martiales are thus prepared: Take of Rust of Iron, twelve Ounces; of powdered Sal Ammoniac, eight Ounces; mix them well; then sublime them in an earthen Cucurbit, with a Glass Head, in an open Fire. Yellow saline Flowers will arise, the Dose of which is from two to twenty Grains. They are powerfully attenuating and aperient, sudorifick, diuretick, and a little cathartick; and if given in a large Dose they excite a Nausea. They are successfully prescribed in stubborn Fevers, in an Asthma, in hypochondriacal and other chronical Diseases.

The Crocus Martis Aftringens is made, By first turning Filings of Iron to Rust, by sprinkling them a sufficient Number of times with Vinegar; then by calcining this Rust in a reverberatory Heat, till it turns to a very red Powder. It is given successfully in Diarrhæas, Dysenteries and Hæmorrhages of all Kinds. The Dose is from sifteen Grains to a Drachm, in form of a Bolus, Lozenges or Pills.

The Astringent Tincture of Iron, or Tinctura Antiphthisica, is thus prepared:

Take of the Vitriol of Iron, an Ounce; Terra foliata Tartari, two Drachms; powder them separately, then mix them by degrees in a Glass Mortar, rubbing them constantly during the Mixture, till they turn to a kind of soft Paste, of a red Colour. Then pour upon them gently four Ounces of restified Spirit of Wine, which will presently acquire a red Colour, and is then to be poured off by Inclination from the Faces. The Dose is from ten to thirty or forty Drops.

It stops Hæmorrhages, Gonorrhæas, and the Fluor Albus in Women. It cleanses and dries Ul-

cers in the Lings, and is often prescribed with Advantage in Consumptions, mixed with equal Parts of Balsam of Capivi. In this Preparation, I have rejected the Sac. Saturni commonly used, and have substituted in its place the Terra foliata Tartari, which extracts the Tincture full as well, and is free from all the Inconveniences which attend the inward Use of Preparation.

rations of Lead.

Having thus given a fufficient Account of the medical Preparations of Iron, it will be proper to fay fomething concerning the Virtues of this Metal, and the Cautions to be observed in the Use of all the Medicines prepared from it. We have already observed, that Physicians have ascribed two kinds of Effects to Iron, one Aperient, the other Aftringent. Hence Chemists have tortured it various ways into Croci, Tinctures, Salts, &c. by which the aperient or aftringent Qualities might be extracted; but it is worth Observation, that the astringent Preparations are often found to prove cathartick and cliuretick; that the Aperent often ftop Fluxes; and the Preparations of both kinds promote the Flux of the Menses, and suppress them when immoderate. If we inquire into the Caufe of these various Phænomena, it will be found to be intirely in the Stypticity of Iron; which, according to the different Difpolitions of the Body of the Patient produces different and even contrary Effects. Therefore though Iron may often act as an Aperient; yet even then it acts only by its Adstriction. To conceive this, we are to confider, that the morbid State of the Blood is of three kinds. The first is the glutinous State, in which the Blood deprived in a great Measure of its fpirituous Part swims in a thicker Serum; and thus flicks in almost all the small Vessels, creating Ob-Aructions almost every where, and consequently Cachexies. The fecond State is a thick Blood, deprived of a great Quantity of its Serum, whence it is faid

faid to be Adust or Melancholick. In this State it easily stagnates in the small Vessels, and produces fcirrhous and fcorbutick Obstructions. Thirdly, the Blood may abound with too great a Quantity of Serum, and thereby open to itself Passages and Channels, into which the Blood does not naturally flow. All these morbid States are owing to the undue Contraction of the Vessels, and their undue Action upon the Fluids, without which Action these Fluids cannot circulate. Thus when the Serum is too thick, the Elasticity of the Vessels is too small to propel the Blood as it ought to be; and hence follow Leucophlegmacies, Chlorofes, Suppression of the Menses, Cachexies and other Difeases of the same kind. When the Quantity of Serum is too fmall, the Blood, if we may fo fay, becomes folid, and thus eludes the Force of the Veffels, forming very stubborn Obstructions, fuch as Scirrhus's, and others of that kind. These Obstructions are often followed by Hæmorrhages difficult to be cared, as is feen in Dropfies. Lastly, when the Vessels are continually bathed in a great Quantity of thin Serum, they lose their Elasticity, and the Blood being too much diluted, relaxes and weakens the folid Parts, passes in unusual Channels, and thus produces Diarrhæas, Diabetes, Hæmorrhages, Dropfies, &c.

What can be the Effect of Iron in all these Cases is evident from its Taste; which in crude Iron, as well as in all its Preparations, is Styptick, contracting the Fibres of the Tongue, Palate, and of the whole Mouth; whence follows a more copious and frequent Discharge of Saliva. Hence we may easily judge, what will be the Effect of all martial Preparations taken inwardly; namely, to constringe the Fibres, to restore and increase their Elasticity; by which Effect, the Fluids stagnating in the Intestices of the Fibreswill be expelled; the inspissated Juices broken to peices, and made more study; and the Motion

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of all the Fluids accelerated. The same Effects are produced in the Fluids. The sibrous Part of the Blood is constricted, and the Serum squeez'd out of it; and that either to the Advantage or Prejudice of the Patient, according to the State of his Solids and Fluids; and therefore great Judgment is required in prescribing Iron, and its several Preparations.

In cachetick Cases, such as Leucophlegmacy, Chlorosis, Suppression of the Menses, and other Diseases in which the Blood is glutinous and viscid, the Preparations of Iron are of fovereign Use; for by its aitringent Quality it brings the Fibres of the folid Parts into Contacts, expresses the Serum contained in the Interstices between them, and throws it into the Veffels. Thus the Blood is diffolved, the Elafticity of the folid Fibres restored, the viscid Juices attenuated, and a due Circulation every where restored. Iron is far from being of the same Benefit in scirrhous, scorbutick, or melancholick Affections; for the Blood being in these Cases too much deprived of Serum, the Veffels already too tense are further corrugated by the Action of Iron, and their ofcillatory Motion thereby impair'd. Hence the inspiffated Blood moves still more flowly, the fibrous Part being gradually more compacted and deprived of its Serum. In fuch Cafes therefore Iron is hurtful, and though it be called Aperient, it can neither refolve these kinds of Obstructions, nor stop the Hæmorrhages arifing from them. Exceffive Evacuations, whether by Stool, Hæmorrhage, continual Sweats, Dropfies, or other Affections, proceeding from too large a Proportion of Serum, are accurately to be diftinguished by Physicians. Iron is of Service in all fuch Difeases, as it strengthens the solid Fibres, expels the redundant Serum, and restores the Elasticity of the Vessels; but if these Evacuations arise from flubborn Obstructions, as is usually the Case in Hectick Fevers, all Preparations of Iron are hurtful

ful; for by separating the serous from the sibrous Part of the Blood, and forcing that Serum out of the Body, they increase both the Evacuations and Obstructions. Thus though the Use of Iron may be proper in the beginning of a Dropsy, it is always hurtful in Dropsies of long standing; because in such the excessive Flux of the Serum having already left the sibrous Part of the Blood almost dry, would be so much increased by the Use of Iron, that the Patient gradually deprived of the Use of all his Limbs would speedily fall a Sacrifice to that Me-

dicine thus injudiciously applied.

Thus all the good and bad Effects of Iron are owing to its Stypticity; by this alone it binds and opens. But it is not to be thought, that all Stypticks perform the same Effects with Iron in proportion to their Stypticity, Iron having this peculiar to itself, that, through all the Stages of Circulation, it preserves this Quality, whereas vegetable Stypticks are so much changed in the Primæ Viæ, that the Blood and small Vessels are hardly affected by them; whereas Iron is only opened by the Juices of the Stomach and Intestines, and thereby disposed to Action, as it enters the Blood, by which its Efficacy is diffused through the whole Habit, its aftringent Virtue being every where exerted. It ought however to be observed, that Iron is better prescribed in Substance, than when impregnated with Salts; for when united with Salts, it is not fo eafily penetrated and dissolved by the Juices of the Stomach. Lastly, Exercise is extremely proper during the Use of Martial Medicines, in order to distribute the Particles of the Iron through the whole Habit, to restore the ofcillatory Motion of the folid Fibres, and to accelerate the Motion of the Blood.

ART IV. Copper.

Copper, Cuprum in Latin, xaxuds in Greek, and Venus in the Language of the Chemists, is one of the ignoble Metals, fofter than Iron, fonorous, of a red Colour, shining when polished, fusible and ductile to a very great Degree. It is fometimes found pure in the Mines, in form of small Rods. Branches, Globules or Masses of other Figures; but most commonly it is contained in a kind of Pyrites, or particular Oar. This Pyrites is in some Mines of a thining Gold Colour, but is not on that Account to be efteem'd richer, because that Colour is owing to a combustible Sulphur. Other Copper Oars are vellow, violet or purple, and some are blackish and mixed with Gold-Colour'd Sparks, or Veins intermingled with green. Copper is feldom found alone, but is generally accompanied with fome other Metals, fuch as Silver, Iron, or Lead, and with a large Quantity of combustible Sulphur, very difficult to be separated from it. Copper Oar is differently managed according to the other Substances mixed with it. If it abounds with Sulphur, it undergoes repeated Calcinations till all the Sulphur be exhaled. The Copper Oar of Goflaar in Germany is first broke into Pieces of the Size of a Man's Fist, then burnt in an open Fire, made of Wood and Charcoal mixed together; and being then broken into fmaller Pieces, it undergoes two Torrefactions more. Afterwards it is melted into a stony red Substance, called Lapis Cupri; which having fuffered another Torrefaction, and being after that melted again, becomes black Copper; which after a fifth Torrefaction, becomes quite free from its Sulphur, but still contains Silver. This Silver is extracted in this manner. They mix with the Copper about four Parts of Lead, or more or less, according as the Lead they use is more or less free from Silver. These

These Metals thus mixed are melted together by a very vehement Heat, and then pour'd out into Moulds, where they harden into a kind of flat Cakes. These Cakes covered with Charcoal in a proper Furnace are heated with a gentle Fire, till the Lead and Silver melt, and leaving the Copper fall down into a Vessel set to receive them. The Copper remains unmelted like a Spunge or Honey-Comb; and in this State is termed Æs pauperum; and is by repeated Fusions brought to be malleable, and every way fit for use. In this last Operation, fome Scoriæ appear, which are specifically heavier than the Mass consisting of Copper, Silver and Lead. These Scoriæ are afterwards melted with a Mixture of Litharge, and by that means the feveral Metals it contains are feparated. There are fome Springs of Copper-waters, of which Vitriol is made by boiling, and Copper may be præcipitated from them, by means of Iron, which has made fome Persons imagine, that these Waters turned Iron into Copper. There is a famous Spring of this kind near the Carpathian Mountains, the Waters of which corrode Iron thrown into it, and in place there of substitute Copper; so that a Horse-Shoe, for instance, that has lain several Days in this Water shall, when taken out, appear not to be Iron, but Copper.

The richeft Copper-mines are in Sweden and Germany. Copper is fofter than Iron, but harder than Lead or Tin. It ignites or becomes red hot in the Fire before it melts. Its specifick Gravity is to that of Gold nearly as four to nine. When exposed to Moisture, it contracts a Rust of a green Colour, which when handled has a very unpleasant Smell, and an austere sharp nauseous Taste. It is soluble in Water, and is apt to be corroded by all Oils and Salts. A Solution of Copper by acid or fixed alcaline Salts is green; but when made by urinous Salts, it is of a beautiful blue Colour. Filings of Copper

Copper thrown into the Flame of a Candle burn and emit a greenish Flame, but do not sparkle; When melted with Nitre, they flash a little. If we take one Part of Filings of Copper and something above two Parts of corrofive Sublimate, and diffil them after being well mixed in a Glass Retort, the Quickfilver disengaged from the Salts comes over in running Mercury; but the Copper remains at the Bottom intimately united to the Salts, in form of a vellowish or reddish Resin; sometimes transparent, fometimes opake; which by the Flame of a Candle may be melted, and fet on Fire, the Flame it gives being of a green Colour. Copper calcined long by a very strong Fire, till it has lost all its Sulphur, turns to reddish Ashes; which being exposed on a Tyle to the Focus of a great Burning Glass turns to an intenfely red Glass almost opake. If this Glass be melted on a Peice of Charcoal in the Focus of the fame Glafs, it recovers its Form of Copper. From thefe things we may conclude, that Copper contains a large Quantity of combustible Sulphur, though not fo much as Iron; and that the metallick Substance is a red vitrifiable Earth. Copper exposed to the Fumes of Quickfilver, or of Arsenick, acquires a Silver Colour which is not permanent; melted with Calamine or Zinch, it turns of a yellow or Gold-colour; the different ways of doing which have been related in the Articles concerning Cadmia and Zinch. Copper, because of its great Ductility and shining Colour, is much employed in domestick Uses; but is seldom used inwardly as a Medicine, because this Metal, and especially its Rust, are reckoned Poisons; and any kind of Food, or even Water, that has flood long in Copper Vessels, is very pernicious. The Symptoms produced by this Poison are Pains in the Stomach and Intestines, excessive. Vomitings, Irritations to Stool, Ulcers in the Intestines, sometimes Difficulty of Breathing, and spasmodick. spasmodick Contractions of the Limbs, and lastly Death itself, if the Quantity of the Poison be great.

The Remedies proper in fuch Cases are the sameas for corrofive Sublimate and Arfenick; first to drink a great Quantity of Milk, Oil, or melted fresh Butter; then to drink warm Water till the Patient vomit plentifully. Clysters made with Oil, Butter or fat Broths, are likewise proper; and lastly,

strengthening Cordials and a milk Diet.

Various Recrements of Copper were prepared by the Ancients, and employed in Medicines, fuch as Ærugo, Flos Æris, Æs Ustum, Squamma Æris; but the Ærugo, or Verdigrease, is the only Recrement now in use. It is a green Rust raised in Copper Plates; the Method of raising it, taken from the Memoirs of the Philosophical Society of Montpelier, is as follows. The Husks, Stones, &c. of Grapes, being first dried, and after dipped in some strong Wine, are laid for nine or ten Days in wooden or earthen Vessels, till they begin to ferment. Then being squeezed together with both Hands, they are formed into Balls, which being put into proper earthen Pots, and Wine poured upon them, till about half is covered, the Vessels have a straw Lid thrown over them, and are fet in a Wine Cellar; where the Balls are left in Maceration for twelve or fifteen Hours, being turned every four Hours, that the Wine may penetrate every Part of them. Afterwards the Balls being raifed about a Finger's breadth above the Surface of the Wine, and fet upon wooden Bars, the Vessels are shut again, and left in that State for ten or twelve Days more. After which time, the Balls emit a strong and penetrating Scent, and are then fit for diffolving Copper. For this purpose, they are broke and bruised with the Hand, that the outer Part of them, which is drieft, may be exactly mix'd with the inner, which is still moist with Wine; then they are stratified with Copper Plates

Plates in the fame Veffels upon wooden Bars, the Plates making always the lowest Stratum, and the Balls the uppermost. The Plates are four Inches long and three broad; and if the Copper be new. they must be previously buried for four and twenty Hours in Verdigreafe, and then heated a little in the Fire. The Veffels being filled in this manner and shut close, are left without any further Management till the Verdigrease is made, which happens sooner or later, according to the Nature of the Copper. Some Copper yields its Rust in fix or seven Days & fome requires twelve or fifteen Days. The Verdigreafe being compleatly extracted, the Plates covered therewith are taken out of the Vessels; and their Edges being moistened with the strongest Wine, they are wrapt up in Linnen Cloths, dipped in the fame, and laid in a Wine Cellar for three Weeks. By this, the Makers tell us, the Verdigrease is nourished, and then it is scraped off from the Plates with Knives, and kept for Use.

Verdegrease is used by Painters and other Artists, but is seldom prescribed inwardly by Physicians. It is often used outwardly to deterge and dry Ulcers, to eat away sungous and callous Flesh. It is an Ingredient in the Balsamum Viride Metensium, Unguentum Viride, Unguentum Ægyptiacum, Unguentum Apostolorum, and Emplastrum Divinum of Charas.

Flos Æris Officinar. is nothing but Copper reduced to finall Grains like Millet Seeds; which is done by pouring cold Water upon melting Copper, which thereupon immediately flies every way into Grains,

which are collected and kept for use.

Es Ustum Officin. is Copper reduced to a Calx or Crocus, either by itself, or mixed with Sulphur or Salt, by a long Calcination in a reverberatory Furnace. It is drying and astringent with a certain Degree of Acrimony.

Squamma Æris Officin. is little different from the Æs Ustum, being only the Particles of Burnt Copper that fly off while it is hammer'd. These Squammæ, or instead thereof the Filings of Brass, mixed with Sulphur and the Powder of Florentine Orrice, and wore in the Shoes, cures stinking Feet; but this Practice may be attended with great Inconveniency; for by checking fuddenly that stinking Sweat, Difeafes of a worfe kind may enfue.

The most usual Medicines prepared with Copper are the Green Precipitate, described among the Preparations of Mercury; and the Ens Veneris of Mr.

Boyle, which is made in this manner:

Take of Colcothar, made with blue Hungarian or Copper Vitriol, well calcined and washed, two Drachms; of Sal Ammoniac, four Drachms; mix them well, and sublime the Flowers three times by cohobating them on the Caput Mortuum. The Dose is from one to six Grains. These Flowers are much commended by Boyle in the Rickets; and are said to be a powerful Remedy in a virulent Gonorrhæa.

The Tinetura Carulea, or Collyrium Caruleum, is made from Copper, Sal Ammoniac, and Lime-Water. It is used for Diseases of the Eyes, to stop Gonorrhæas, and to deterge and dry Ulcers.

The Chemists imagine, that a red Sulphur is contained in Copper, called by Helmont, Ignis Veneris and Sulphur Philosophorum, which he fays prolongs Life. They try to extract this Sulphur for two Reasons; first to obtain thereby a soveraign Remedy in all Difeases, and a present Anodyne in all Pains. Secondly, To deprive Copper of its red Colour, and make it a white Metal refembling Silver. But I can find no other Sulphur in Copper, except that bituminous Inflammable Substance com-

mon to all Metals, and indeed to all combustible mixt Bodies. In giving fuch large Encomiums to this Sulphur, the Chemists therefore only shew their own Ignorance, for the red Colour of Copper is owing to the Earth, not to the Sulphur contained in it; and it is perfectly vain to pretend to extract a fixed Sulphur from that Metal; for these red Tin-Etures are only the Copper itself divided into very small Parts, and suspended in different Menstrua, as appears by precipitating these Particles. They have likewise vainly endeavoured to rob Copper of its red Coat, as they term it; for what they call white Copper, does not owe that Colour to the Lofs of its red Sulphur; but to the Addition of a white Earth, found in the fixed alcaline Salts, which they make use of. This Becherus has very justly obferved:

CHAP. II. Of Perfect Metals:

ART. I. Silver:

Silver called Argentum in Latin, as you in Greek; Luna by Chemists, is a noble or perfect Metal; of a shining white Colour, sonorous and ductile; but yet more imperfect than Gold. As it is found in the Mines, it is distinguished into Natural and Rude. Natural Silver is that which is dug up pure and unmixed, being found either in the Clests and Fissures of Rocks or Stones, or mixed with Sand or Earth without Stones. It is met with in very different Forms; sometimes in Branches, simbriated in small Filaments like the Hairs of a Man's Head,

granulated, or refembling the Leaves and smaller or larger Twigs of Trees. It has likewise been found in large Masses; such as that mentioned by Olaus Wormius, which, as taken out of a Mine in Norway,

weighed an hundred and thirty Marks.

Rude Silver is that which is found in Oars, and must be refined by Fire, These Silver Oars are in fome Mines red, being mixed with Arfenick; in fome, of a Lead Colour, owing to the Sulphur contained in them; in others, black, purple, Ashcoloured, &c. according to the different Substances mixed with the Silver. It is often found in Gold, Copper, Tin and Lead Oars, in different Quantities. There are Silver Mines in many Countries, Italy, Germany, Hungary, Norway, England, &c. but the richest are those of Potosi in Peru, and those of Mexico. Almost all the Lead Mines in England contain some Silver; but the richest are those of Cardiganshire in Wales, where two thousand Weight of Lead Oar yeilds from ten to twenty Pounds of Silver.

Silver is eafily separated from Lead; nothing being required but to melt the Lead in Moulds made of Ashes, and placed in a proper Manner in the Furnaces. The Fire is then continually blown with Bellows, till the Lead being vitrified is absorbed by the Moulds, the Silver remaining behind. The Extraction of Silver from the Peruvian and Mexican Oars, is much more difficult; because these Oars are extremely hard, and also mixed with bituminous, fulphureous, arfenical or vitriolick Substances, which carry off with them a confiderable Part of the Silver, or burn it to Scorie along with themselves. Therefore according to the different Nature of the Oars, the Workmen pursue different Methods. If the Oar be too hard to be broken to pieces with Hammers, it is burnt in a moderate Fire, both to make it brittle, and to discover more exactly what Substances are

7

mixed with the Silver. They next grind this Our in Mills to a fine Powder; and if the heterogeneous Substance be Sulphur or Antimony, they mix with the Powder Rust or Scales of Iron. If it contains Iron, they add Sulphur or Antimony, and thus calcine all these Substances together; and then a sufficient Quantity of Quickfilver is added. If the Quickfilver runs not into Spheres, but into fmall oblong livid Parts like little Worms, it is Proof that the Oar contains Lead or Tin. To separate these Metals, they use certain Compositions called Magistaries, the Basis of all which is Æs Ustum, or calcined Copper. Thus the Silver Oar, being intimately mixed or amalgamated with the Mercury, is rubbed and washed for a long time in Water; and whatever Substance cannot unite with the Quickfilver, is carried off by the Stream of Water, the Amalgama remaining pure and entire behind. This Amalgama is afterwards fqueezed in Linnen Cloths, to press out the Quickfilver; and the Silver Cakes or Loaves that remain, are exposed to the Fire in earthen Veffels, to evaporate any Quickfilver that still adheres to them. Afterwards the Metal is melted into Maffes, adding about one fifth Part of Copper as an Allay. We have already shewn the Method of separating Copper from Silver, when it is in great Quantities. When the Quantity of Copper is small, it is separated by Lead in a Cupel, made of Bones calcined to Whiteness, or of Ashes washed till no Salt remains in them. Thefe Ashes, or powdered Bones, being wrought into a Paste with Water, are made into Cupels, and then very well dried. These Cupels are fet on live Charcoal in a Furnace, and about four or five Parts of Lead are melted in them. To this melting Lead one Part of Silver to be refined is added, and when both Metals are in perfect Fusion, the Fire is increased, by continually blowing till the Lead is vitrified, and driven to the Sides Sides of the Cupel, and by the Addition of a proper Quantity of Quickfilver, is either absorbed, or flies off in Fumes, the pure shining Silver remaining alone

in the Cupel.

If Gold be mixed with Silver, the way of separating this Metal, called in French par le Depart, is different from all the former. If the Quantity of Gold be very confiderable, as much Silver must be added as to make it four times the Weight of the Gold. Then they are melted together, and thrown into Aqua Fortis, which dissolves the Silver, and leaves the Gold untouched in form of a black Powder, or Mud; from which the Solution being poured off by Inclination, it is frequently washed, and then melted. The diffolved Silver is precipitated by the Affulion of about twelve or fifteen Parts of common Water, and at the fame time immerging Copper Plates, to which the Silver sticks, like an Ash-cofoured Powder, which being dried is melted into

Masses or Lumps.

Silver is harder and less ductile than Gold; and its specifick Gravity is to that of Gold a little less than as five to nine. It is likewife lighter than Lead. It never contracts Ruft, grows black by the Fumes of Sulphur, is diffolved by Aqua Fortis, but not by Aqua Regia. It is not destroyed by Lead, being long exposed to a strong Fire with Antimony, is fomething diminished by the fulphureous Part of that Metal. When exposed to the Focus of a great burning Glass, either on a Tyle, or on a Peice of Charcoal, it flies all off in Smoke, but very flowly, and is never turned to Glass, as the other Metals hitherto mentioned; because the sulphureous Principle, to which Metals owe their Ductility, Shining, and Opacity, is fo closely united with the metallick Earth, that they fooner fly off together, than they can be separated into their Principles. The

The Solution of pure Silver is limpid, and its Crystals are of no Colour; but if it contains any Copper, the Tincture is greenish or bluish. The Taste of these Crystals is intensely bitter. Silver made to mix any way with common Salt melts into a semidiaphanous Mass resembling Horn, which for that reason is called Luna Cornea, which it is very difficult to reduce to Silver, because being volatile, if it be exposed to a strong Fire, it slies

almost all off in Vapour.

The Arabians attributed to Silver the Virtue of ftrengthening the Head and Brain, and of recruiting the Animal Spirits. These Virtues have been exaggerated by the Chemists. Hence, in many compound Medicines of the Arabians of the cephalick and strengthening kind, Silver is an Ingredient; and among the Chemists we find Tinstura Lunares, Luna potabilis, Diaphoreticum Lunare, Bezoardicum Lunare, Gc. However, as we dare not maintain, that Silver is quite destitute of medicinal Virtues; so we cannot affirm, that these cephalick and strengthening Qualities belong to it. It is an Ingredient in the Confestio de Hyacintho and Pulvis Lætiscans of Charas; and is often used instead of Leaf Gold, to cover Bolus's and Pills.

The most usual chemical Preparations of Silver are the Lunar Crystals and the Lapis Infernalis. The Lunar Crystals, called also Catharticum Argenteum,

are thus prepared:

Take of pure Silver, an Ounce; Spirit of Nitre, four Ounces; make a Solution, and evaporate one third; then set the Remainder in a cool Place, and Crystals will be found, which being carefully separated, the remaining Liquor is again to be evaporated to an half, and then set to crystallize as before. Dissolve all the Crystals in clear Water, adding an Ounce of purished Nitre; Evaporate this Solution, and crystallize again as before.

fore. These last Crystals are to be kept for Use by the Name of Luna Hydragoga, or Vitriolum Lunæ Purgans. The Dose is from three to eight Grains. This Medicine is recommended in the Palsy, and Ascites, being reduced to a fine Powder, and made into Pills with Crumbs of Bread. These Pills have been called Pilulæ Lunares Boylei, and powerfully evacuate the Water in Dropsies.

The Lapis Infernalis, or Perpetual Caustick, is

thus made:

Take of pure Silver, an Ounce; of Spirit of Nitre, three Ounces: Make a Solution, and evaporate the Phlegm in a Sand Heat to one Half. Pour the Remainder into a large Crucible, set in a moderate Charcoal Fire, so as to boil. When the Ebullition is over, and the Mass appears to be sunk, increase the Fire, and it will appear fluid like Oil. Then throw it into Metalline Tubes, first warmed, and when it is bardened, keep it for Use, well guarded from a Moist Air. It is a notable perpetual Caustick, soon corroding and consuming both the Flesh and Bones, to which it is applied.

Several blue or Sapphirine Lunar Tinctures are highly celebrated by Chemists; but are very improperly said to be Tinctures of Silver, being in reality Tinctures of Copper, and therefore not sit for internal Use. The Tincture of Silver is altogether limpid and diaphanous, but its Virtues are hitherto unknown. The Women prepare a Water or Wash of the Solutions of Silver and Quicksilver, wherewith to die their Hair black. The best of that kind is thus made:

Take of granulated Silver, an Ounce; of Aqua Fortis, two Ounces: Make a Solution. Dissolve likewise

likewise apart six Drachms of Quicksilver in six Ounces of Aqua Fortis. Mix the two Solutions, and add to them as much common Water, as will so far weaken them, that the Liquor will not corrode Copper, or raise Bubbles on its Surface. Keep this Liquor two or three Months before it is used.

ART. II. Gold.

GOLD, Aurum in Latin, xgusde in Greek, Sal, by the Chemists, is the most noble, most perfect, and heaviest of all Metals; ductile, sonorous, and of a reddish Yellow Colour. It is sometimes found Pure and Unmixed in the Earth, in Rivers, and in the Clefts and Fiffures of Stones, either in Duft, or larger Pieces. The Oars, from which Gold is extracted by Fire, are sometimes a kind of Pyrites, of an Ash or Purple Colour. It is often found with Orpiment, and is likewife fometimes hid in the Mines of other Metals, especially of Silver, from which it must be separated by various Contrivances. There are many Rivers, among the Sands of which Gold is found in finall Grains; and there are large Gold Mines in Norway, Hungary, and Guinea; but the richest are in Peru and Mexico. It is extracted from its Oar much in the fame manner as Silver, by Torrefaction, beating to Pieces, mixing with Quickfilver, Washing, &c. It is separated from Silver and the other Metals, with which it is mixed in the Cupel, by Means of Lead, or by Cementation; from Silver alone, by that Method called in French, Le Depart, or L'incart, or in the dry Cupel, by Antimony.

The Way of feparating Gold from other Metals by Lead, was shewn in the foregoing Article. Ce-

mentation is performed in this manner:

The Gold, being formed into thin Plates, is put into a Crucible with the Cement Powder, stratum superstratum, the Powder making both the Upper and Lower stratum. The Crucible being full, is covered with a Lid with a small Hole in the Middle, and the foints are well luted; then it is exposed to a strong Fire for six or eight Hours, till it is all over red-bot. Afterwards the Fire being extinguished, the Gold Plates are cleared from the Dust with a Hare's Foot washed in Urine and dried. The Cementing Powder is made of one Part of Sal Ammoniac, two Parts of common Salt, and four Parts of powdered Bricks, well mixed together.

This Method of Refining does not altogether feparate the other Metals from Gold, but renders it foft and ductile. The Method of feparating Silver from Gold, par le Depart, was shewn in the last Article. Quartation, called L'incart in French, is performed almost the same Way, with this Difference only, that three Parts of pure Gold are to be added, and the Solution is to be performed with Aqua Regia, by which the Gold being dissolved, the Silver remains untouched.

Gold is purified with Antimony, when the Quantity of Silver mixed with it is fo fmall as to be neglected; in which Cafe Antimony destroys the Silver, reducing it to Scoriæ, and leaves the Gold Pure.

One Part of Gold is first of all melted with two or three Parts of Antimony, then kept boiling in a Cupel, by a continual gentle blowing of the Bellows, till all the Antimony vanishes, leaving the Gold perfettly free from Silver.

The Difference between the Purification by Lead and by Antimony is this, that the greatest Part of the

the Lead being vitrified, it penetrates the Cupel,

whereas the Antimony all flies off.

Gold is the heaviest of all Metals, and of all known Bodies; but withal fo foft and ductile, that it may be extended to 652590 times its first Bulk, In all common Fires, it remains fixed; and even when exposed in the Focus of the greatest Burning Glass, it suffers that Heat for a great while before it begins to evaporate. It never contracts Ruft, and is diffoluble only in Aqua Regia. It is capable of being penetrated by Mercury, and its Texture fo far opened as to be turned into a foft Amalgama. It may be calcined by common Sulphur, if fet on Fire and flaming. When diffolved by Aqua Regia, it may by Oil of Tartar per Deliquium be precipitated into a blackish Powder, which being gently heated, either by Fire or by Attrition, flies off into the Air with a great Noise; whence it has the Name of Aurum Fulminans. The fame Effect will happen by using Spirit of Sal Ammoniac, or any other urinous Spirit, instead of Oil of Tartar; but then the Fulmimination requires a greater Degree of Fire.

The Analysis, or Resolution of this Metal, we have hitherto attempted without any Success. The Sulphur and Earth seem to be so strictly united in it, as not to be separable by the common Powers of Fire; and in the Focus of the greatest Burning-glass, intire Parcels of it sly off, without any apparent Re-

folution into its Principles.

The Use of Gold in Physick was unknown to the ancient Greeks. The Arabians first talked of its medicinal Virtues, and mixed it in their Compositions, being previously reduced to thin Leaves, upon a Perswasion that it comforted the Heart, and exhilarated the Spirits; and that therefore it was proper in Palpitations of the Heart and in Melancholies. The Chemists add further, that a most powerful fixed Sulphur is contained in Gold, which if it be mixed

mixed with the Blood preserves it from all Corruption, and restores and revivisies human Nature in the fame manner as the Sun, the great Original of this Sulphur, enlivens all Nature. Many Authors are of a quite different Opinion, because the Effects of Gold are found not to answer these great Pretensions; and it may be reasonably questioned, whether Gold be at all useful in Physick. Leaf Gold is an Ingredient in the Confectio Alkermis Regia; the Confectio de Hyacintho, Pulvis Diamargarita Frigidus, Pulvis Lætificans and Pulvis Pannonicus, all of Charas. It is likewise used to gild Pills and Bolus's.

The Virtues of the chemical Preparations of Gold are equally dubious, because they seem to derive their Energy not from the Gold, but from the Menstrua and other Substances mixed with it. Whence we may conclude, that the most valuable and most precious of all Metals is the most useless in Physick, except when confidered as an Antidote to Poverty.

The Tincture of Gold, or Aurum Potabile, made in the best manner is this:

Take of pure Gold, balf a Drachm; of Spirit of Salt, two Ounces; make a Solution, and pour upon it of the limpid essential Oil of Rosemary, an Ounce; shake the Mixture well, and the Spirit of Salt will subside, deprived of its yellow Colour, which is retained in the Oil that swims at the top. Separate this Oil from the Spirit by Inclination. Mix it with four or five Drachms of Spirit of Wine bighly restified; digest them for a Month, and the Mixture will acquire a purple Colour. This Tineture is Diaphoretick and Sudorifick, and is recommended in malignant Fevers. The Dose is from three to fifteen Drops.

But after all, this is not a genuine Tincture of Gold, being only the Gold divided into very small Parts by the Spicula of the Aqua Regia, swimming in the Oil of Rosemary; neither do we know any radical Tincture of Gold, which may not by evaporating the Oil be reduced to a Powder, and by melting the Powder into Gold. The chief Virtues of this Tincture are owing to the Oil of Rosemary.

The Aurum Fulminans is esteemed not only for its fulminating Quality, but also for the medicinal Virtues attributed to it; and is prepared in this

manner:

Take of Spirit of Nitre, an Ounce; dissolve therein a Drachm of Sal Ammoniac; throw into this Solution a Drachm of Gold-dust, and dissolve it by a moderate Heat. Then pour into the Solution by Drops Oil of Fartar per Deliquium, till the Ebullition ceases. The Gold will be precipitated like a yellow Mud. Then having poured off the Liquor by Inclination, wash and edulcorate the Powder, and dry it in the Shade.

This Powder, even by a gentle Attrition, goes off with a violent Noise, and taken inwardly is thought to be Diaphoretick; but it may more truly be faid to relax the Intestines, as was observed by Ludovicus and Koning, who affirm, that this Preparation being given in Fevers, in which the Patient inclines to a Diarrhæa, promotes that Discharge, and on that account sometimes proves satal.

Laftly, the Chemists tell us very wonderful things about the *Philosophers Stone*, or an Universal Tincture, which being projected on the ignobler Metals, penetrates their Parts so intimately, without any visible Shew, that they are in an instant changed to a Metal, that has the Colour and Weight of Gold. They amuse us likewise with an universal Medicine, which

Animal Substances.

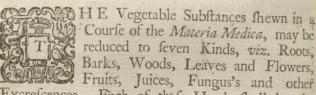
283

which cures all Diseases, and purges the Blood from all Disorders by a kind of Irradiation; so that Life and Health may be preserved for a very long time, if not to Eternity. As I know nothing of this universal Medicine, I can say nothing about it. And for the Philosophers Stone, the Materials from which it is to be prepared are hitherto undetermined, as well as the Method of preparing it, whatever impertinent, ignorant Pretenders may boast. By these Pretensions, however, they have found the Secret, if not of making Gold, yet of getting Gold already made into their Clutches; and for that reason every prudent Man ought to beware of them.

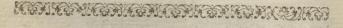




PART III. Vegetable Substances.



Excrescences. Each of these Heads shall be the Subject of a particular Section; and in each Section we shall observe an alphabetical Order.



SECT. I. Roots.

1. Radix Acori. Acorus Root.

HREE Kinds of Acorus are used in the Shops. The first is called Acorus Verus, falso Calamus Aromaticus Graecorum & Offic. C. B. P. It is brought from Flanders, Holland, and the East-Indies. By a chemical Analysis it yields a considerable Quantity of acid Spirit, a little volatile urinous Salt, some gross Oil, some essential Oil, some

fome Earth, and a fmall Portion of fixed alcaline Salt. The Principle, which predominates in this Plant, is like a volatile urinous Salt mixed with an effential Oil, and accordingly it is carminative, aperient, attenuant, emmenagogue, diuretick, diaphoretick, alexipharmack, cordial; and is fuccefsfully used in Cholicks and malignant Fevers, being given in Powder, from half a Drachm to a Drachm; and in Infusion, from half an Ounce to an Ounce. This Acorus is not the Calamus Aromaticus of the ancient Greeks.

The fecond Kind is named Acorus Indicus vel Asiaticus Officin. It differs from the former only in Size, and in being of a much stronger Smell. It comes from the East-Indies and from Canada; and its Virtues are the fame with those of the first kind.

The third Kind is the Acorus Adulterinus, five Pseudacorus Officin. being the Root of the Isis Palustris Lutea Tabernemont. It is very little in Use at present, but was formerly substituted for the Acorus Verus. Dodonæus says, it is very aftringent.

2. Anchusa Orientalis. Alkanet of the Levant.

Lemery fays, this Root is likewife called Alkanet of Constantinople. It is, in all probability, the Root of one Species of Echium; the common kind of which is named in English Vipers Bugloss; and it is used in the Countries, where it grows, to give a red Co-

lour to Silk and Cotton Stuffs.

The common Alkanet, Anchusa Offic. is brought from Languedoc and Provence, being the Root of the Buglossum Radice Rubra, sive Anchusa Vulgation. The Bark is of a red Colour; and the whole Root is aftringent, proper in Hæmorrhages of all kinds; and is likewife used by Dyers. Apothecaries also employ it to colour their Ointments, particularly the Unquentum Rosatum; but for this purpose, it must be boil'd in Oil, for it does not readily communicate

its Tincture to Water. The Ancients used it as a Cofmetick, as is mentioned by Galen.

3. Beben. Been.

Authors diftinguish two Sorts of Been, white and red, but both are different from the Arabian Ben,

which is the Glans Unguentaria Offic.

White Been is a Root, which Rauwolfius found at the Foot of Mount Libanus, and which Tournefort brought from the Leffer Afia. The Plant, to which it belongs; is named Jacea Orientalis Carthami facie J. R. H. according to Vaillant. It is cordial, antifpafmodick, and good to kill Worms.

Red Been is imported in round Slices. Some believe it belongs to a Species of Limonium, or Sea Lavender; but its Origin is not certainly known, It is supposed to have the same Virtues with the

former, and moreover to be aftringent.

4. Butua sive Pareira Brava Lusitan. Pareira Brava.

This Root is commonly about the bigness of the little Finger; though fometimes larger. It is of a brown Colour, wrinkled both ways on the Surface, but its inner Substance is fibrous like the Thymelæa: Zanoni fays, that when cut transverfly, it represents the Sun and his Rays; but this Conceit is without Foundation. It is of a fweetish Taste, with a disagreeable Mixture of Bitter, and without any Smell. Authors pretend, that this Root comes from Brazil, for this reason, because we get it from the Portugueze; but it is much more probable, that it is of East-India Growth, for a Surgeon fent it from Surat to M. de Jussieu, by the Name of Boutua Root, and wrote, that it grew along the Coast of Malabar.

This Root is much celebrated by the Portugueze, as an Alexipharmack, and an Antidote against all poisonous Plants. It is undoubtedly a very good Diuretick, and very proper in nephritick Cholicks.

The Way of using it is to boil about a Quarter of an Ounce, scraped or rasped, in two or three Pints of Water till reduced to a Pint; of which, the Patient is to drink a Glass every balf Hour, in a warm Bath, his Body being before prepared by Bleeding and Clysters.

A fmall Quantity of the Syrup of the five opening Roots may be added to the Decoction; and by this Method alone M. Geoffroy cured the great Abbé Bignon of a Stone Cholick, and made him void a very large Stone. When given in a large Dofe, it heats confiderably. It feems to act by diffolving the flimy Matter contained in the Kidnies and Bladder; and has been given with great Success, mixed with Balfam of Capivi in Gonorrhæas, after sufficient Evacuations. The Decoction already mentioned has likewife done Wonders in hepatick Cholicks, ariting from an Obstruction of the Orifice of the Gall Bladder, a Glass being drank every three Hours, to the Quantity of a Quart. The Portugueze use this Root, powdered, for Quinfeys, and Difeases of the Thorax.

There is likewise another Root, called White Pareira Brava, said to come from Brafil. It is more woody than the former, composed of Fibres, of which fome are longitudinal, the rest orbicular. The Bark of this Root is white, but the Substance within yellow, like Liquorish.

5. Contrayerva Offic. Drakena Clus. Contrayerva.

The first of these Names was given to this Root by the Spaniards, from its Alexipharmack Quality; for Contrayerva in Spanish signifies Counter-Poison. The fecond Name was given it by Clusius, in Memory of the famous Drake, who brought it from America, and fent it to that great Botanist. It is reckoned Sudorifick, Alexipharmack, Aftringent,

and good in Epidemical Dysenteries. The English put Contrayerva, Cochineal, and a little Nitre, into Ptisanes for the Small-pox. The Dose of the Root in Substance is from half a Drachm to a Drachm, and in Insusion from half an Ounce to an Ounce. The Plant that comes nearest it is the Carpia of Piso.

6. Costus sive Costum Officin. Costmary.

We are still ignorant of the Costus of the Antients, of which the Greeks had three Kinds. What now goes by that Name is of an acrid, bitterish Taste, and of a Smell like Violets, but more disagreeable. It is named Costus Iridem redolens C.B.P. and is an Ingredient in the Theriaca Andromachi. Pliny distinguishes two Kinds, the White and Black; and the Arabians had likewise two Kinds, one Sweet, the other Bitter. The Dose of our Costmary is from twelve Grains to half a Drachm, and in Insusion from two Drachms to half an Ounce. It was antiently tised as a Persume. Hence this Line of Propertius;

Costum molle date & blandi mibi thuris bonores.

It was likewise employed in Sacrifices.

7. Curcuma & Terra merita Offic. Cyperus Indicus Diascorid. Turmerick.

We have two Kinds of Turmerick, the Long and the Round. The Long is most used in Physick, and is the Root of a Plant called Cannacorus Indicus sive Curcuma Officin. The Indians make use of both Kinds to season their Victuals, as the Europeans do Saffron; they employ it likewise in dying and painting Stuffs. The Long Kind is a good Stomachick, Antiscorbutick, and Antihysterick, and very proper in the Jaundice. The Dose is from twelve Grains to half a Drachm.

8. Cyperus Offic.

There are three Sorts of Cyperus. The first called Cyperus rotundus Orientalis Major C.B.P. is Carminative, Emmenagogue, Stomachick, and Diuretick. Hippocrates recommends it in Difeases of the Uterus, and Simon Pauli in Ulcers of the Bladder, mixed with the Schananthe.

The Second Kind is named Cyperus Rotundus nostras, & Vulgaris C.P.B. which is less Aromatick, and

of less Efficacy than the former.

The Third Kind is the Cyperus Odoratus Radice longa, or Cyperus Longus Officin. Its Virtues are of the fame fort with the other two, but it possesses them in a less Degree.

9. China Offic. Chinna vel Schinna Tabernæmont. China Root.

China Root is of two Kinds, Oriental and Occidental; but we are as yet uncertain what Plant it belongs to. Many Authors, and Kampfer among the rest, say it is a Species of Smilan; but others pretend, that it is a Senecio, which is in the Leyden Garden, and about which M. Ruysch once promised to

publish some new Observations.

Soon after the Pox broke out in Europe, Physicians brought this Root into very great Vogue for the Cure of that Difeafe. They used it in Sudorifick Ptisanes, and the Emperor Charles V. having taken it with Success, several Treatises were written concerning its Virtues; among which we have an elegant Piece of the great Vesalius, then Physician to that Emperor. But as this Ptisane did not continue to have always the defired Success, Mercury was substituted in its Room. It has likewife been much used in Sudorifick Ptisanes with Sarsaparilla, and Lignum Vitæ; and its Name is taken from the Country from whence it is brought. 10. Ga-

10. Galanga Offic. Galangal.

The Galangal Root is either Small or Great, The Small Kind is the Root of a Plant called Lagondi Indorum Herman. It is Carminative, Stomachick, Cordial, Alexipharmick, Emmenagogue, and Diuretick. It is given from fifteen Grains to half a Drachm, in Substance; and in Insufficient from half a Drachm to two Drachms; and is an Ingredient in many Compositions.

The Second Kind, called Galanga Major, is the Root of a Plant named Banchale Indorum Herman, and is brought from Java and Malabar. It is not used in Medicine, but the Makers of Vinegar em-

ploy it to give Strength to that Liquor.

11. Hermodactylus Officin. Hermodactil.

The Hermodactil is the bulbous Root of a kind of Colchicum, called Colchicum radice ficcata alba C.B.P. which is different from the Root of the common Colchicum in that it remains white when dried. This Root was used commonly among the Antients as a Cathartick, but its Action is very flow, tedious, and fatigueing. It is better when corrected with Aromaticks, and is now sometimes mixed with Jalap, in Rheumatisms. The Women in Egypt eat roasted Hermodactils to make them fat.

12. Jalappa seu Jalapium Officin. Mechoacanna nigra quorund. Jalap.

Jalap is the Root of a kind of Night Shade, called Jalappa Officin. fructu rugoso J.R.H. It was unknown to the Antients, and also in Europe, till the Discovery of America. It is one of the best Purgatives which we now have, and is used with great Success in Obstructions of the Viscera of the Abdomen; being given in a Bolus in the Quantity of twelve or fifteen Grains, with Mercurius Dulcis. It

may

thay likewise be joined with the Peruvian Bark, in the Proportion of twenty-four Grains to an Ounce of Bark, and made into a fost Electuary with three Ounces of Syrup. A Drachm of this Electuary will purge very well; and hence we see that the Bark affists Jalap in its Action; for in a Dose of this Purge there is about three or four Grains of the Root. It may be advantageously given in this Manner in habitual Intermitting Fevers, accompanied with a

bad Habit of Body.

The Resin of Jalap ought to be given in very small Doses; that is, from five to twelve Grains at most; and it ought to be remembered, that if this Resin is not either very well dissolved or mixed, it sticks to the Folds of the Intestines, and raises great Heats and other Disorders. Therefore it is always better to give it in Substance. This Resin loses its Virtue by being long kept. If given in the Quantity of sisten or twenty Grains, it purges very briskly; and Simeon Pauli compares it on that account to Scammony. Wepfer, in his Treatise De Cicuta Aquatica, mentions some Experiments made with Jalap Root on Dogs; the Event of which was, that the Dogs died, and their Intestines were found to be perforated.

13. Ipecacuanha, Radix Brasiliensis.

We have three Kinds of Ipecacuanha, the Grey or Ash-coloured, the Brown, and the White; which last, called also Pseudipecacuanha, M. Tournesort discovered to have no Virtue, and is perhaps that kind mentioned by Piso; so that, properly speaking, we have only two Kinds of Ipecacuanha, that of Brasil, and that of Peru, called Bexuguillo. The Plant which produces this latter fort is unknown; and the Root itself was not known in France till the Year 1672. One M. Le Gras, who was not a Physician, brought it first over, and gave it to M. Craquenel, an Apothecary,

thecary, but it fucceeded very ill in his Hands, he having given it in the quantity of two Drachms for a Dose, which was too great. In 1687 M. Garnier attempted to re-establish its Credit; in order to which he applied himself to the elder Helvetius, who made feveral fuccefsful Trials of it. After which the King purchased of Helvetius the Secret and Manner of giving it, and made it known to all the World; and it was afterwards of great Service in the Armies and Hospitals. This Root is given from fifteen Grains to half a Drachm, and we ought in no Case to exceed a Drachm. It never fatigues the Stomach, and is the best Succedaneum for the Emetick Tartar. It is the best Specifick in Dysenteries hitherto known, acting in fuch Cafes not only as an Emetick, but also deterging Ulcers in the Intestines, by a Mucilage contained in it like that of Marsh-Mallows, by which it in fome measure supplies the villous Coat of the Intestines, when corroded and destroyed by the Disease. It also powerfully shakes and evacuates the Glands of that Vifcus. Its best Effects are in old Dysenteries, after many other Medicines have been tried, and the Body has by these been fufficiently prepared; then the first or second Dose generally produces visible good Effects; or, if they should happen to miss, it ought to be continued every Day in the quantity of three or four Grains, acting in that Case as an Alterative.

This Root has an Emplastick and Detersive Quality joined together; and, though it does not appear fensibly Acrid, it produces in those who powder it an Oppression in the Thorax, Disticulty of Breathing, and Spitting of Blood. It is likewise offensive to the Eyes, increases the Discharge of the Lacrymal Glands, and, when the Tears do not find ready Vent, the Eyes swell. These Effects are probably owing to the Mucilaginous Quality of this Root. The Analysis of Ipecacuanha is to be seen in the

Memoirs

Memoirs of the Academy of Sciences for the Years

1700 and 1701.

The fame Cautions ought to be observed in giving Ipecacuanha, as in giving Emetick Tartar. It is taken in Substance finely powdered, either mixed in a Liquid, or incorporated with a proper Syrup into an Opiate. It may likewise be given in Insusion or Decoction.

> 14. Iris Florentina. Florentine Orice, or Flower-de-Luce.

This is the Root of a Plant called Iris Alba Florentina C.B.P. It is reckoned proper to attenuate the Lympha, which stuffs the Bronchia and Glands of the Intestines. It is often joined with Hydragogues in beginning Dropfies, to scower the Glands of the Mesentery; and a kind of Ratafia is likewise made of it for the fame Purpose. It is good in Asthmas, joined with other Medicines; and is an Ingredient in the Theriaca and Mithridate.

15. Mechoacanna Officin. Rhabarbarum album quorund. Mechoacan.

This is the Root of a Species of Convolvulus, named by Ray, Convolvulus Americanus Mechoacanna dictus. It is diftinguished from Briony Root by being more viscid, being without Acrimony, and of a faint nauseous Taste. It is faid to be a strengthening Purge; being given in Substance from half a Drachm to an Ounce; but is not purgative in Decoction. The Spaniards prepare from it a white Fecula, called by them Lac Mechoacannæ, half an Ounce of which is a Dose, powdered and mixed in Broth. Since Jalap has been discovered, Mechoacanna has been but little used.

16. Nardus. Spikenard.

The Greeks had five kinds of Spikenard; but we know but three, the Indian, Celtick, and Mountain

or Spanish.

The Nardus Indica, or Spica Nardi, is the Root of a Plant of the East Indies, named by Breynius Gramen Cyperoides Aromaticum. What looks like the Filaments of the Root are not properly such, but the Remains of the decayed Leaves. It is a very good Attenuant, is used in Cholicks, and promotes Sweat and the Menstrual Discharge. It is an Ingredient in many Electuaries, and other Compositions used externally; such as the Oleum Spic. Unguentum Nardinum. Galen relates, that he cured an Emperor of the Cholick in his Stomach by rubbing that Region with this Ointment. This Spikenard may be given inwardly, from half a Drachm to a Drachm; and in Insusion from half an Ounce to an Ounce and an half.

The Nardus Celtica is a finall knotty Root, brought from the Tyrol and belongs to the Plant named Valeriana Celtica, I. R. H. It has nearly the

fame Virtues with the Indian Nardus.

The Nardus Montana, or Hispanica, is the Root of a Species of Valerian, which grows in the Mountains of Leon in Spain; but we are not certain what the Ancients called by this Name. It is not much used in Physick, but its Virtues are like those of the two former.

17. Nisi. Gen-seng Sinensium. Garen-toguen Hiroquæorum.

This Root belongs to a Species of Araliastrum, according to Sarassin and Vaillant. It is said to be found in the North Part of China, and in Canada. Father Lassiteau, a Jesuit, now Bishop of Sisteron, wrote a Treatise about it; in which he calls it Aure-

liana

liana Canadensis, Sinensibus Gen-sing, Hiroquæis Garentoguen. Botanists have been divided in their fentiments about the Original of this Plant. Hollon thought it an Opium; and Kæmpser believed it to be a Sisarum. Whatever be in that, that which comes from Canada is certainly known and demonstrated every Year in the Royal Garden. We owe the Discovery of it to the Jesuits. The Oriental Kind grows in the Northern Part of China, in the Peninsula of Corea, and in Tartary; and the Names both of this and of the Occidental have been given it from some Resemblance it is supposed to bear to the Human Body, being nearly of the Figure of the Mandrake.

The Gen-sing of Canada differs from that of China, in being neither so yellow nor so bitter. Its Taste is very agreable, and it has been used with Success in Fevers. In Tartary and China it is highly esteemed, being purchased for twice its Weight in Silver, and is thought to retard the Essects of Old Age, and to recruit decayed Strength. They insuse it in Wine or Broth, to the quantity of half a Drachm or a Drachm. By its bitter Aromatick Taste, it discovers it self to be attenuant, strengthening, and deobstruent. Lassiteau's Treatise was published at Paris in 1718, and in that Year is an Account of it in the Memoirs of the Royal Academy.

18. Pyrethrum Officin. Pellitory of Spain.

There are two kinds of this Root in the Shops, both described by Lemery. It is extremely acrid, and on that account is chewed to evacuate the Glands of the Throat, and in Palsies of the Tongue. It is likewise used as a Sternutatory in Lethargies, but is feldom given inwardly.

19. Rhabarbarum seu Rheum Officin. Rhubarb.

We do not certainly know the Plant, of which Rhubarb is the Root. It is probably a Species of Lapathum, called by Herman Lapathum Sinense. It is brought from China, but Muntingeus pretends that he cultivated it in Holland, in his Book de Vera Herba Bullanica.

It is one of the best and mildest Catharticks in the whole Materia Medica. It operates very well on the Bile, and on all the Viscera of the Abdomen, and at the same time strengthens the Nervous Fibres. On these Accounts it is proper in weak Stomachs and Intestines. It is given in Substance from twelve Grains to half a Drachm, and in Infusion from half a Drachm to a Drachm and a half; and in a small Dose, it becomes an excellent Alterative. It purges the Bile very effectually, and has a greater Force than any, other Purgative in opening Obstructions of the Liver. It is found, by certain Experience, to evacuate the Bile preferably to any other Fluid. On this account it is the Panacea of Children, and also because it strengthens the Stomach, and carries off all forts of Matter that flagnates therein. It is a very good Remedy for Worms, and is given to Children fubject to Chronical Difeases, in a Ptisane called Rhubarb-Water. The Use of Rhubarb is, however, dangerous when the Kidnies or Bladder are fuspected to be inflamed, because it heats considerably; and for this Reason it is improper in Hæmorrhages. It is very good in Loofenesses, because it purges and ftrengthens at the fame time. In Cachexies it ought to be given in small Quantities for a considerable time.

20. Rhaponticum Officin. True Rhapontick.

This Root has been very well described by *Prosper Alpinas*. It is very like Rhubarb, but may be distinguished from it by its leaving a mucous Taste in the Mouth, its Mucilage being diluted by the Saliva; and because when it is cut it appears regularly marbled, of a Red, White, or Yellow Colour; and these Colours are disposed in a radiated Manner. It is less purgative than Rhubarb, requiring a double Quantity to produce the same Effect. It is likewise a little astringent.

21. Saleb, vel Serapius Turcar. & Officin.

This is the Root of a kind of Orchis, or Satyrion, which grows on the Mountains of Bursia near Constantinople. The Turks pretend that it is very effectual in restoring decayed Strength, and exciting Venery. It is also said to prevent Abortion, and is used both in Substance and in Insusion.

22. Sarsaparilla, Salsa-Parilla, or Zalsa Parilla Officin.

This is the Root of a Plant called by Caspar Baubinus, Similar Aspera sive Zarza Parilla. It was formerly used in America for Venereal Diseases, and afterwards in Europe. It is given with Success in all Cases where the Lympha is to be attenuated and divided, as in the Rheumatism, Gout, &c. It may be mixed with Lignum Via, Sassafras, &c. in desiccative and sudorifick Decostions; but, when boiled by itself, an Ounce is sufficient for a Quart of Water.

23. Sima Ruba.

This is the Root of a West India Plant, which produces the Cayan Wood, remarkable for being very

very light. The Root and Bark are faid to be excellent Aftringents, proper in all Sorts of Loofenesses, and especially in Dysenteries. The Dose of the Root is an Ounce, cut in small Pieces; and of the Bark two Ounces; boiled in three Pints of Water to a Pint. This Decoction the Patient uses for his common Drink, till he is cured.

24. Serpentaria Virginiana Viperina; Aristolochia seu Pistolochia Virginiana. Snake Root.

This is a fibrous Root, brought from Virginia to England, and from thence to France. Plukenet diffinguishes three Kinds of it. It is used by the Natives of Virginia to cure the Bite of the Rattle-Snake. In Europe it is given as a Diaphoretick in the Small-pox, Measles, &c. and to kill Worms. It is likewise Emmenagogue and Diuretick. The Dose is from ten Grains to a Drachm; and it is an Ingredient in the Countesses Powder.

25. Turpethum Officin. Turbith.

This is the Root of a Plant named Convolvulus Indicus Alatus Maximus foliis Ibisco nonnibil similibus, Angulosis. Raii Histor. & Turpethum repens foliis Althew vel Indicum C. B. P. It is brought to us from Zeylon, Malabar, and other Parts of the East Indies. It is a flow Purge, and is therefore joined with other quicker Purgatives. It is recommended in the Gout and Palfy, being mixed with Jalap. The Dose is from a Scruple to a Drachm.

26. Zedoaria Officin. Zedoary.

We have two Kinds of this Root, one named Zedoaria Longa C. B. P. the other Zedoaria Rotunda C. B. P. But they are both the Roots of the fame Plant, the Body of which is round, and the Protuberances, or Ramifications, long. The Plant they belong

belong to is a kind of Colchicum, described by Herman in the Paradisus Batavus. They are brought from the East Indies, and have an aromatick, camphorated Taste. They are reckoned attenuant, detergent, emmenagogue, carminative, anthelmintick, cordial, alexipharmic, stomachick, diuretick, &c. The Dose is from five Grains to half a Drachm in Substance, and it may be used in Insusion like Tea. Some correct Opium with this Root. Simeon Pauli pretends it is the best Carminative now known, and values it as a Grand Specifick for voiding Wind. V. Asta. Hasnia.

27. Zinziber seu Zingiber Officin. Ginger.

This is a tuberous, knotty Root of a Plant named by fome Authors Iris Latifolia Tuberosa, Zinziber dicta, flore albo. It grows in the East Indies, and is now cultivated in the Caribbee Islands, from whence we have it. When the green Root is eaten in any confiderable Quantity, it is Purgative. The Indians eat it as we do Cresses. When dry, it is very aromatick and attenuant, and is used to correct fome Catharticks, fuch as Agaric, &c. It strengthens by its oily Part, and enlivens the Blood, and is likewife good in the Scurvy. It is an Ingredient in many Compositions. The Dose is from three to ten Grains. The Confectioners in England and Holland preserve it with Sugar; which Preserve is called Zinziber Conditum, Candied Ginger, and is carried to Sea as a Remedy against the Scurvy. Candied Nutmegs are used for the same Purpose. Though Ginger is a very Acrid Root, it is very apt to turn carious.



SECT. II. BARKS.

1. Cassia Caryophyllata, & Cinnamomum Americanum Officin. Canelle Gerofflée Gallor.

HIS is the Bark of a Plant named by Hernandes, Caninga, and by Herman, Myrtus Arborea Americana. It is feldom used in Physick. The Taste of it is acrid and aromatick, and its Virtues are the same with those of Cloves; instead of which it is often fold in Powder by the Druggists, as being much cheaper. However, this is a very harmless Imposition.

2. Cassia Lignea, Cassia Odorata, & Hylocassia Officin. Woody Cassia.

We have two Sorts of this Bark, differing from each other in Degrees of Fineness. It differs from Cinnamon, in that when chewed it becomes mucilaginous, and at length entirely melts in the Mouth, which Cinnamon never does, and has likewise a more aromatick Taste. The finer Sort is the second, or inner Bark, of the Carua Hort. Malabar. and the coarser, the second Bark of the Tree that produces the Malabathrum, or Indian Leas. Some ancient Authors named this Bark Darsennum, and hence several Apothecaries have been ignorant enough to take it, when mentioned in Prescriptions, or Dispensatories, for Arsenick. It has the same Virtues with Cinnamon, but in a lesser Degree. It is a little astringent, and for that Reason proper in Fluxes.

3. Cinnamomum Officin. Cassia Zeilanica C. B. P. Cinnamon.

The Tree, which produces Cinnamon, grows without Culture in the Island of Zeylon, and the Trade thereof is entirely in the Hands of the Dutch, who are Masters of the Coasts of that Island; and the King of Zeylon dare not fell it to any but them. This Tree has two Barks; the first called in Latin, Liber, has but the fixth Part of the Virtue of the other, which lies within it. The Berries, by Coction and Expression, yield an oily Substance, of which Candles are made for Persons of the first Rank; and from the Neck of the Root they draw a delicious kind of Camphire, very rarely to be met with in Europe, which has a Smell made up of that of the common Camphire, of Cinnamon, and of Cloves. The old Trees yield a Refin of a very agreeable Smell, refembling that of the Oil of Rose Wood; and Travellers relate, that when they are within twenty Leagues of Zeylon, they fmell the Cinnamon Trees.

Cinnamon is an excellent Stomachick and Cordial, Digestive, Attenuant, Emmenagogue, &c. It corrects the bad Qualities of refinous Purges, and strengthens the Stomach when weakened by too much Purging. The effential Oil of Cinnamon is good for the Tooth-ach, being dropped into the Hollow of rotten Teeth, where the Pain is feated. The Oil of Cloves has the fame Effect. Of this Oil and Sugar is made a very pleafant kind of Eleo-Saccharum, very effectual in many Cases, being first diluted with Water. The Golden Powder of Zell is made of this Eleo-Saccharum, mixed with a little Cinnabar, to give it a red Colour. It is given in Canary Wine, to strengthen the Stomach, and recruit the decayed Spirits, and makes an excellent Ratafia:

4. Cortex Winteranus, Canella Magellanica, Cinnamomum Magellanicum. Winter's Bark.

There are two Kinds of this Bark, the Cortex Winteranus Verus, and Cortex Winteranus Spurius,

hve Costus Corticosus Officin.

The true Kind is the Bark of a Tree called by C. Baubin Laurifolia Magellanica Cortice Acri: It is outwardly of a greyish or ash Colour, and brown within; and of an acrid Taste and Smell. Winter, whose Name it bears, was Companion to the samous Drake. He found it on the Coasts of the Magellanic Straits, at a Time when his Soldiers and Sailors having eaten of a poisonous Animal, called the Sea-Lion, were seized with a kind of Scurvy, which made them break out in Blotches all over their Bodies, but by the Use of this Bark they were happily cured. This Bark is much used, especially in England, as a good Stomachick, and some pretend that it cures Intermitting Fevers, taken in the quantity of a Drachm, before the Fit.

The fecond Kind is the Inner Bark of the Cinnamomum five Canella alba tubulis albis C. B. P. It is of a white Colour, very brittle, not mucilaginous, and of an acrid Tafte; but its Virtues are less than those of the first Kind, with which it is often confounded in the Shops; and Lemery himself did not well perceive the Difference there was between them. It grows commonly in Jamaica, and is used in England as a Stomachick. Sir Hans Sloane has described

both Kinds.

5. Cortex Ligni Guaiaci. Lignum Vitæ Bark.
This Bark shall be described in the next Section, with the Lignum Vitæ it self.

6. China China. Kina Kina. Cortex Peruvianus Officin. The Peruvian, or Jesuite's Bark.

This Bark is brought from *Peru*, and there are three Kinds of it: The first is of a bitter, refinous Taste, and not so Red as the common Sort; the second, less than the first, is covered with a Moss; the third is the finest, and imported in small Pieces.

The Peruvian Bark is uneven and thick, its Colour refembling that of Cinnamon, Coffee, or Ruft of Iron. It is of a bitter Taste, and has no Smell but what comes from the Wood. The Name Kina Kina is taken from the Count of Cinchon, who was Vice-Roy of Peru, when this Medicine was discovered. The Tree to which it belongs is not as yet sufficiently known. It is said to have Leaves like the Plumb-Tree, and Flowers like the Orange-Tree. Herman says, it is a high large Tree, like the Lime-Tree, and that it bears Berries. It grows in the Inland Part of Peru, on the Mountains near Loxa, or Loja, in the Province of Quito. The Spaniards say that the Use of its Bark was discovered in the following Manner.

Near the Town of Loxa was a Lake furrounded by Quinquina Trees, before the Spaniards fettled in that Country. These Trees being by an Earthquake, or some other Accident, thrown into the Lake, communicated a bitter Taste to the Water; so that the Inhabitants, who used to drink it, were obliged to leave it off. However, an Indian who had a violent Fever upon him, and consequently a great Drought, sinding no other Water, was forced to drink of this, by which he was perfectly cured of his Fever. He related this Adventure to some of his Friends, who having made the same Experiment, were likewise cured. Upon this, they set themselves to discover what had given this febrifugous Quality to the Water of the Lake, and found, in the first

place, that a great number of Trees had fallen into it; and, fecondly, that after a certain Time, thefe Trees, being rotted in the Water, it loft its bitter. Tafte, and, at the fame time, its Virtue. Whence they concluded, that this Virtue was owing to the Trees. Afterwards they tried all the Parts of them infused in Water, and thus discovered that their whole Virtue refided in the Bark. The Spaniards having conquered their Country, this invaluable Medicine was kept a great Secret; and they obliged themselves, by Oath, never to discover it to their Conquerors, hoping thereby to fee them all perish by the Epidemical Fevers that then reigned in the Country. The Secret was inviolably kept, till the Year 1640. when a Spanish Soldier quartered in an Indian's House, who had got into the good Graces of his Landlord, was feized with a fevere Ague. Indian, touched with Compassion, and fearing, perhaps, that he should have a worse Guest, if this Soldier happened to die, brought him the Bark, which having taken, he was foon perfectly cured. The Soldier, furprized at fuch an unexpected good Effect of an unknown Remedy, made use of all his Address to discover the Tree to which this Bark belonged, and at length fucceeded. For fome time he contented himself with curing his Fellow Soldiers, but never told them by what Means. But the Vice-Queen, Wife of the Count De Cinchon, then Vice-Roy of Peru, being feized with an Intermitting Fever, which had fo far baffled the Skill of her Phyficians, that her Life was despaired of, and this Report having reached as far as Loxa, the Soldier, who was Master of the Secret, told his Commanding Officer, that if he would allow him to go to Lima, he would cure the Vice-Queen. The Officer having informed himself of the Cures he had performed in that Country, readily gave him not only leave to go, but also Letters of Recommendation and proper CerCertificates. Being arrived at Lima, he was admitted to make Trial of his Medicine, on this Condition, that he was to take as much himself as he gave to his Patient. This he easily agreed to; and having fucceeded in a very little time, he was amply rewarded, and then prevailed on to discover the Secret; which the Spaniards made use of from that Time forward with fo great Success, that the Phyficians were aftonish'd and half starv'd. In 1649 Father de Lugo, a Jesuite, then Procurator General of his Order, and afterwards a Cardinal, brought fome of this Bark to Rome, and the Society began to bring it into Reputation in Europe; by which they got a great deal of Money in a short Time. They fold it for more than the Weight in Gold; and to difguise it the better, never parted with it but in Powder. From that time it was called the Jesuites Powder, because these Fathers were the sole Mafters of it, and had brought it into use. Two Drachms were at that time thought fufficient for the Cure of any intermitting Fever, because they never gave it, till after many other Medicines had been made trial of. The Physicians were divided in their Opinions about it; fome looking on it as a divine Medicine, while others believ'd it dangerous, and even fatal in many Cases. Many Treatises were written, some for it, others against it; but the English Physicians having at length made several Experiments with it, that might be depended on, it came to be greatly in vogue in England; and the famous Morton wrote his Pyretologia in its Defence. In 1679 a Person named Tabor, who, to make himself more considerable, changed his Name to Talbot, came into France; where having cured the Dauphin of a stubborn Quartan Ague, by this Medicine, it gained a great Reputation, and the King purchas'd his Secret, and made it publick. It was then termed the English Remedy, and consisted of an Infulion

Infusion of the Bark in Wine. There was a little Treatise publish'd at that time, with this Title, The English Remedy for Fevers.

The Bark is an infallible Remedy for all intermitting Fevers, if the following Circumstances be

observed.

t. The Patient ought to lose fome Blood, and to be purged before he takes the Bark; and if he is of a dry Habit of Body, he ought to be kept for some time to a liquid Diet; because before the depuratory Fermentation is begun, the Fluids ought to be well diluted.

2. The Bark made use of ought to be compact or folid, of a reddish Colour, like Cinnamon, of a faint Smell, a little musty; bitter and aftringent

to the Tafte, and not kept too long.

3. It ought to be given in large Doses. For instance, a Drachm of powder'd Bark may be taken at a time, in a Glass of white Wine or Water, and repeated every three Hours, till the Time of the Return or Paroxysm be over. It may likewise be given in Insusion or Decoction. An Ounce boiled in a Quart of Water, till reduc'd to a Pint, being drunk by large Draughts in the Interval between two Fits.

4. It ought to be continued for a long Time after the Fever has ceased, gradually diminishing the Dose and the Frequency of repeating it. This is a sure

way to prevent a Return.

This Remedy appears fometimes to fail; that is, the Fever returns, after a certain Quantity of it has been taken; but this is never owing to Want of Efficacy in the Bark, but from Ignorance of the true Method of taking it. Thus, if the Body is not fufficiently prepared, it cannot act as it ought, because of the Obstructions it meets with in the Prime Via

Viæ and in the Blood-veffels. If the Bark be bad, nothing is to be expected from it; and if the Dose be too small, or not continued for a sufficient Time, it only deadens the Fever for a time, but does not radically destroy it. It is therefore a groundless Prejudice that the Bark fixes Agues, or that the Use of it is ever attended with bad Confequences, especially in the Stomach, as many pretend. The Patient is seldom thoroughly cured without some kind of Crifis, especially by Stool or Urine. This latter is the best, and the Physician may be assured that his Patient is safe, if he makes a greater Quantity of Urine than usual. The Bark has likewise been given in Clysters with Success; but then the Quantity usually taken by the Mouth ought to be tripled.

This admirable Specifick is likewife a good Alterative, and confequently proper in an infinite Number of Cases where there is no Fever; for it strength-

ens the Stomach, excites the Appetite, &c.

This Medicine is not hurtful to weak Lungs, as fome imagine, Experience having often shewn the contrary; and it has often prov'd very successful in Catarrhs and other Kinds of Fluxions, even when accompanied with Spitting of Blood, as in the Case of the late Mareschal Talard. But in these Cases other Pectoral Medicines are to be joined with the Bark.

Some join with the Bark given in Fevers, dried Arum Root, Sal Ammoniac, Cinnamon, &c. Sal Ammoniac is the most proper of any, being mixed in the Quantity of half a Drachm to two Drachms of Bark.

7. Kina-Kina Aromatica Palo de Calenturas. Cascarilla, Cortex Eleterii sive Scacarilla Offic. Cortex Peruvianus griseus sive spurius.

This Bark is of a greyish or Ash Colour, of a Taste like Cloves, and of an agreeable aromatick X 2 Smell.

Smell, formething like Amber. Juncherus, Valentini, and other Germans fay, it is the Bark of the Canella Magellanica, Laurifolia Cortice Auri, C.B.P. confounding it with the Cortex Winteranus, which is a Mistake. We are not as yet throughly acquainted with the Tree, which produces the true Cascarilla. It yields a very agreeable essential Oil, which used formerly to be mixed with Snuff to give it a fine Smell. But lately the Germans, and especially M. Stabl, have recommended this Bark as an excellent Medicine in Diseases of the Thorax, and as a good Stomachick. Apenus a German Physician has written a Treatise about it, in which he praises it in malignant Fevers, the Plague, Dysenteries, and Weakness of the Intestines.

8. Costus Caryophillatus.

This is the first Bark of the Cassia Caryopbillate above mentioned.

9. Coriex Tamarisci. Tamarisc Bark.

This Bark is order'd in Aperient Decoctions, to remove Obstructions of the Viscera of the Abdomen, to promote the Flux of the Menses, &c.



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S E C T. III. Woods.

1. Agallochum & Xylo-Aloes Officin. Pao Agula. Aloes Wood.

Baubin distinguishes three kinds of this Wood.

The first, called Agallochum præstantissimum Calambac Indorum, is the most resinous Part of the Wood, and melts on the Fire. The second is the Lignum Aloes vulgare Officin. called also Lignum Ætites. It always looks as if it were worm-eaten, and containing a great Quantity of resinous Matter is burnt in the Country where it grows instead of Candles. The Juice got by cutting the fresh Wood is very caustick and poisonous, and it sometimes deprives the Workmen of their Sight.

The third kind is the Calambour, called likewife Lignum Ætites, because of its Colour. It is brought from the Philippine Islands, and is used to make

Snuff-boxes, Heads of Canes, &c.

Aloes Wood is a powerful Cordial and Stomachick. It is given in Substance from a Scruple to a Drachm, and in Tincture from one to two Drachms. The Monks in the East Indies make it into Beades; and it yields by Distillation a very agreeable Effential Oil, which is a good Sudorifick.

2. Acajouanum Lignum.

This is not the Wood of the Tree that bears the Acajou Nuts. It is of a red Colour, and never touch'd by Worms, which renders it very proper for Furniture; but it is feldom used in Physick.

X 3

3. Arundo

3. Arundo Saccharifera. The Sugar Cane. See Sugar, in the Section of Juices.

4. Aspalathum Officin.

We are not throughly acquainted with the Tree to which this Wood belongs; and as the Antients, especially *Pliny* and *Galen*, have varied very much in their Accounts of it, the same thing may be said of them. The *Arabians* have called by this Name a large thorny Tree, which they have not described.

5. Brasilianum Lignum. Brasil Wood.

This is the Wood of a Tree called Pseudo-Santalum rubrum Brasiliæ, C. B. P. It is used by Dyers, in dying Red, as the yellow Brasil Wood is for that Colour.

6. Calamus Aromaticus verus Officin.

This is the true Calamus of the most antient Greeks, Fuscibius, Brassavola, and several other Authors, have given this Name to the Acorus verus, mentioned in the first Section; but Prosper Alpinus and other Physicians, more exact than the former, have discovered that the true Calamus is a Reed; whereas the Acorus is a Root. This Reed is of an Aromatick and very pungent Taste.

7. Campechianum Lignum. Log-wood.

This Wood, sometimes called Jamaica Wood, does not grow in that Island, but upon the Coast of the Bay of Campechy. It is chiefly employ'd in dying.

8. Cedrinum Lignum. Cedar-wood.

This is the Wood of a Tree named Larix Orientalis fructu rotundiore obtuso, J. R. H. Gedrus Libani,

bani, J. B. It is of a red Colour, fomething refinous, and of a strong agreeable Smell. It is faid never to rot, and is therefore much valued for Furniture, and is fometimes used by Physicians as a Sudorifick.

9. Citrinum Lignum. Lignum Jasmini.

This is the Wood of a Tree called by Sir Hans Sloane Nerion Arboreum foliis angustissimis. It is of a close Texture, very refinous, and burns like a Candle, smelling, while it burns, like Jessamin.

10. Colubrinum Lignum.

This Wood comes from a Kind of Solanum, which produces the small Nuces Vomicæ. It is brought from the Islands of Timor, Ceilon, &c. and is of a very bitter Taste. It is a strong Purgative and Emetick, taken in Insusion from a Scruple to a Drachm; and in Substance from ten Grains to a Scruple. But tho' it purges the Europeans so much as often to throw them into Convulsions, the Indians support it perfectly well. It is likewise used to kill Worms, according to the Observations of Antonius de Hyde.

11. Ebenus Officin. Ebony.

The Tree which produces this Wood is very tall and thick, and grows in the Island of Lucon, one of the Philippines. It is a black close Wood, smooth to the Touch.

There is a kind of Ebony which is red, called Grenadilla, or Portuguese Ebony; and another green fort, named by C. Baubin Ebenus Americana spinosa. None of them are much used in Physick; some, however, look on the black fort as sudorifick and drying, and say it may be used in Decoction as Lignum Vita.

12. Fætidum Lignum. Kasulai Malabarorum. Stinking Wood,

This Wood is brought from the Islands of Timor and Salor. It is of a very offensive Smell, but that Smell is confined to the Wood; from which, however, may be drawn a very agreeable Effential Oil, which taken inwardly causes Sweat.

13. Guajacum Lignum; Lignum Sanetum, Palus Vitæ. Guajacum Wood, or Lignum Vitæ.

This Wood is either of a whitish or brown Colour. C. Baubinus distinguishes three forts of it, Guajacum magna matrice, propemodum sine matrice, & folio Lentisci; but these are no more than so many Varieties of the Wood of the same Tree, as Father Plumier has observed. This Wood was formerly used for the Cure of Venereal Diseases; the Patients being kept under an exact Regimen, and drinking plentifully of strong Decoctions made of it, for thirty Days. This Method succeeded very well in hot Climates, but did not in Europe; for which Reason the Physicians were obliged to call in the Assistance of Mercury; but the Lignum Vitæ Diet-Drinks continue still to be very much in use during Mercurial Courses.

14. Literatum Lignum. Lignum Sinense. Letter'd Wood.

This Wood brought from China is fometimes mark'd with Letters, from whence it has its Name, but it is very little used in Physick.

15. Nephriticum Lignum Officin.

This is a close, yellow or reddish Wood, which turns brown when long kept, and loses the greatest Part of its Virtue. It is a very good Aperient and and Diuretick, and one of the best Antinephriticks known in Physick. It acts without causing any Inflammation in the Kidneys or Bladder. It is used in Insusion, being suffer'd to lie in the Water till it turns it yellow or bluish, which is generally in two or three Hours time. This Insusion pour'd into a Glass Phial, and placed between the Eye and the Sun, is yellow; but blue when the Eye is between the Sun and it.

16. Rhodium Lignum. Rose-Wood.

The Tree which bears this Wood is believed by Herman and others to be a Cytisus. It is brought us from the Morea, where it grows; being very refinous and of a pleafant Smell, refembling that of The Hollanders being in quest of some Ships which perished on the Coast of New Holland, in the thirty third or thirty fourth Degree of Southern Latitude, found on that Coast a great Quantity of this Wood. It is also much esteemed in China, where its Infusion in Water is believed to cure or prevent many Difeases. An Effential Oil is got from it, which has fo much the Smell of Roses, as to be often substituted for their effential Oil; but the Smell of the first kind is never so strong as that of the other. This Oil is fometimes used by Barbers, to make their Water fmell agreeably. When the Antients termed this Wood Lignum Rhodium, we know not whether they intended to express that it grows in the Island of Rhodes, or smells like a Rose.

17. San-Lucianum Lignum. Santa Lucia Wood.

This is the Wood of a Tree named Cerasus Race-mosa Sylvestris, fructu non eduli, C. B. P. It is brought us from Lorraine. It is very tender, and has some Smell, but is little used in Physick.

18. San-Marthanum Lignum.

This is a kind of red Brasil Wood, used in dying, and which comes from St. Martha, near Carthagena, in the Spanish West-Indies.

19. Santalum Officin. Saunders.

There are three forts of Saunders, the White, Red, and Yellow. It is brought from Siam and from the Islands of Timor and Salor; but Botanitts are not agreed to what Tree it belongs. According to Herman it is called Sircanda, and bears Berries. The White kind comes from the young Trees, the Red and Yellow from the old ones; the former of these two being the outer Part of the Wood, the other that next the Pith. The Labourers, who cut this Wood, are often feized with malignant Fevers and Deliria of a very fingular Kind, the affected Person generally imitating the Actions of that Trade to which he was brought up; and they have also a Fames Canina of a very terrible Kind. See Bontius de Medicina Indorum. The Yellow Saunders is most proper for Physical Uses. It is Resinous, of an agreeable Smell, and excites Sweating. The White has not fo strong a Smell, and the Red has none at all; but it may be distinguished from Brasil Wood by its Roughness in the Mouth, when tasted; and accordingly it is a little aftringent. All the Kinds, especially the Yellow, enter into many Compositions; fudorifick Decoctions are likewife made of them.

20. Sassafras Offic.

According to Herman, this is the Wood of a Virginian Tree, which has Leaves like the Fig-tree, and is called Pavane by the Natives. It is of a reddish Colour covered by a red Bark. It also grows in Brasil, and Piso makes three Kinds of it.

It has a very agreeable Smell; but that of the Bark is strongest, and very like the Smell of Fennel. This Wood is fudorifick, diuretick, attenuant, and especially proper to remove Obstructions in the Kidneys and Uterus. It is likewife recommended in the Gout and Rheumatism as a Sudorifick. The Dose in Substance is from half a Drachm to a Drachm; and in Infusion or Decoction from one Ounce to two Ounces. It yields an Effential Oil by Distillation.

21. Saffafras spurium, sive Lignum Anisatum.

This is the Wood of a Tree called Anifum Peregrinum, C. B. P. and it likewise bears the Seeds called Semina Badian. The Wood is of a yellow Colour, and differs from the true Saffafras likewife, in being harder and more refinous, and in fmelling like Anifeeds.

22. Violaceum Lignum. Lignum Polyxandrinum.

This is a heavy, close Wood, of a beautiful Violet Colour, marbled and shining, and capable of a very fine Polish. The Smell is pleasant. The Dutch bring it from the East-Indies, and it is used to make Cabinets and other Pieces of Furniture. Another fort of Violet Wood is likewise brought from Holland, of a more reddish Colour, employed for the fame Purposes as the former, but neither of them are used in Physick.

23. Xylo Balfamum.

This is the Wood of the Shrub that yields the Balfam of Mecca, and passes for a powerful Cordial, Cephalick and Alexipharmick. It has been ordered in many Compositions; but as it is very hard to be procured, Apothecaries generally substitute for it, either yellow Saunders, or Aloes Wood. SECT.

SECT. IV.

Flowers and Leaves.

1. Alcanna Offic. Kenna Turcar. & Mauror.

HIS is the Leaf of the Ligustrum Ægyptiaeum, C. M. P. and when reduced to a yellow Powder, is used for a Cosmetick by the
Natives; namely, by the Men to dye their Beards
red, and by the Women, to dye their Nails of the
same Colour; in order to which, they make it into
a fort of Paste, with Juice of Lemons. Its Medicinal Virtues are Emmenagogue and Hysterick;
and accordingly it is used in the Eastern Countries,
to cause Abortion, and to bring away dead Children.

2. Dictamnus Creticus Offic. Dittany of Crete.

This Leaf has always been look'd upon as an excellent Vulnerary and powerful Cordial; it is likewife an Emmenagogue, Diuretick, &c.

3. Carthamus Officin. Bastard Saffron.

This is the Flower of the Carthamus five Cnicus, J.B. It is brought from Provence and from Germany, in fome Parts of which it is used as Seasoning for their Food, in room of the true Saffron. A Facula is prepared from it, of a fine red Colour, in this Manner:

They boil the Flowers in a Lixivium of Pot-ash; then having strain'd the Liquor through a Flannel Bag, they let it settle till it deposites its Fæcula.

This was formerly used by the Ladies as a red Paint; but Carmine, which is prepared from Cochineal, is now substituted for it, as being of a finer Colour.

4. Crocus Officin. Saffron.

Saffron is the Extremity of the Piftillum of a bulbous Plant cultivated in the Province of Gatinois in France, and in many other Countries. Its Virtues are to enliven the Blood, and remove Obstructions of the Viscera. It is also recommended in Diseases of the Thorax and Brain, and for expelling the morbid Humors in malignant Fevers. It likewise brings on Sleep, mitigates violent Pains, and is commonly an Ingredient in Refolvent Cataplasms and Collyriums. It enters many Compositions; such as the Theriaca, Pilulæ Ruffi, &c. Dioscorides and Avicenna fay, that three Drachms of Saffron are mortal; but Etmullerus observes, that in Hungary and Poland they eat an Ounce at a time; however, taken in too great Quantities, it causes the Headach, Drunkenness, Convulsions, Deliriums, and other Accidents, which may prove mortal, if not speedily remedied. Amatus Lusitanus tells us, that it has been found to cause the Risus Sardonicus. The common Dose is from fix Grains to a Scruple. A deeper Tincture is to be extracted from Saffron by Water, than by Spirit of Wine; which shews that it contains a faline and a gummy Part.

5. Cassine Vera Floridanorum.

This Leaf is used as Tea. It comes from New France; and another Species of it, call'd Apalachine, from Missippi. It is used with Success in the Gout; but perhaps its principal Virtue is owing to the hot Water. The Paraguay is a fort of Apalachine, used by the Spaniards, especially by those who work in the Mines.

6. Folium Indum, Malabathrum Offic.

This is the Leaf of a kind of wild Cinnamon-tree, brought us from Malabar and other Places of the East-Indies. These Leaves are distinguished from the true Cinnamon Leaves, by their being less aromatick. Their Virtues are cordial, alexipharmick, &c.

7. Juncus Odoratus, Scænanthe Officin. Squinanth or Camels Hay.

This is a kind of Gramen which grows in great Plenty in Arabia Felix, and other Parts of the East. The whole Plant, and especially the Flowers, have an aromatick Taste; which is therefore preferred to the other Parts, though Galen chose the Stalk. Some use a kind of Tea made of these Flowers, to raise Sweat; and the whole Plant was esteemed by the Antients to be Cordial, Stomachick, Cephalick, &c. It is an Ingredient in the Theriaca, and named by C. Baubin, Juncus Odoratus Rotundus.

8. Senna Officin.

The antient *Greeks* and *Romans* were ignorant of this Drug; the *Arabians* having been probably the first who used it in Physick. It is of four kinds.

This is the true Oriental Senna, smoother to the Touch, and not so green as that of Tripoli, and its Infusion is of a pale Colour. The Leaf is of a pretty strong Consistence, and shaped like the Point of a Spear. This is the best fort of Senna. It purges Phlegm in a particular manner; but as it is apt to gripe, it ought to be given with Caution to those who have weak Viscera, or are of an instamma-

tory Habit of Body. It is usually mixed with Carminatives, such as Coriander Seed, Cinnamon, &c. or more effectually with Alcaline Salts. It ought to be well cleaned from its Stalks, and then the Dose in Substance is from a Scruple to a Drachm; and in Insusion, from two Drachms to half an Ounce. Some have endeavoured to correct Senna with the Serophularia Magna Aquatica, but that is now left off, common Tea having the same Effect. Some Physicians order Senna by the Name of Folia Orientalia.

- 2. Senna Tripolitana. This kind is greener, larger, rougher, and of a more difagreeable Smell than the former. It does not yield fo much by Infusion; that is, a greater Quantity is required to make the Infusion of equal Strength, but it is of a greener Colour.
- 3. Senna Italica, five foliis obtusis, C. B. P. Senna Florentina, J. B. It is distinguish'd from the true Senna, by the Largeness and Roundness of its Leaf. This Leaf is likewise much thinner and more brittle than the other. It is a very weak Cathartick, but gripes violently, and therefore is seldom used.
- 4. Senna de Mocha. The Leaves of this kind are longer and narrower than those of the true fort, its Smell stronger, and it gripes more violently. It is not used in this Country.

The Folliculi of Senna are likewise in use; but of these in the next Section.

9. Thea Sinensium, Tcha Tsia Japonens. Tea.

This is a Leaf brought from China and Japan, an excellent Account of which is given by Kampfer,

Pfer, in his Amanitates. Exotica. The fresh Leaf is faid to affect the Head, and to intoxicate; but it loses these Qualities when dried and prepared. The Japaneze first bruise the dried Leaves in Stone Mortars, and then throw a fufficient Quantity into boiling Water, and fuffer it to infuse but a very little while. The greatest Advantage of Tea, considering the Quantity of it that is drank, feems to be that it prevents the hot Water from relaxing the Stomach to too great a Degree, because it is a little aftringent; all the other Effects of this fashionable Liquor feem to be owing to the hot Water. Tea boiled in Milk, in the Quantity of two Drachms to a Pint, has been found to stop a Looseness, the Dose being repeated two or three times. Green Tea drank too freely is prejudicial to weak Lungs. They who are fubject to this Difease ought therefore to chuse Bohea, and to mix Milk with it, in order to make it more laxative.

The European Tea is the Veronica, and the American the Apalachine, already mentioned.



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SECT. V. FRUITS.

I. Acajou Nux.

THIS Nut grows at one End of a kind of Apple, which is the Fruit of a Tree called in Brasil, Acajaiba. It is nearly of the Size of a Chefnut, and shaped like a Kidney; and, contrary to all other Fruits, it grows on the Outfide of the Apple. It contains a Kernel of a very pleafant Tafte, fomething like that of a Filbert. This Kernel is inclosed in a double Husk or Shell, and between the two is a Diploe, or cellular Substance, filled with a very acrid, corrosive Liquor, of a red Colour, and very proper to take off Freckles or Sun-burn from the Face. But Women ought never to use it in the time of their Menses; because in that case it often causes an Eryfipelas; though even that may be cured by a Wash made of Brandy and Water.

2. Anacardium Offic.

This is a Seed about the Size of a Duck's Heart, and, like the Acajou, contains a pleasant Kernel, and very acrid Liquor. It is brought us from the Philippine Islands, and Authors are very much divided in their Opinions concerning its good or bad Qualities; but these Differences proceed from not diffinguishing between the whole Seed, and the Kernel alone; which last, well cleaned, can contain no hurtful Quality; but otherwise the Liquor contained in the cellular Substance of the Husk, though eaten

with the Kernel, must produce Inflammations, and

other Disorders.

In some old Dispensatories we find a Composition named Confectio Anacardina, which is not now in Use. Hossman, in his Treatise of Officinal Medicines, tells a very surprising Story concerning this Confection; namely, that by the Use thereof, a young Man, who was before so dull and stupid as not to be capable of learning any thing, became in a short time a very great Genius, and comprehended every thing that was taught him with Ease. It was thought very proper to help the Memory, and was likewise recommended to quicken the Motion of the Blood, and on some Occasions said to cause a Fever; which shews that the whole Nut, not the Kernel only, was an Ingredient in this Confection.

3. Amomum Racemosum.

This Fruit is an Ingredient in the Theriaca, and is fometimes mixed with strong Purgatives, to qualify them a little. Each Fruit is divided into three Cells, and is of a very pungent Taste. It is brought from the Philippine Islands, and is reckoned Carminative, Alexipharmick, Stomachick, &c.

4. Anisum Sinense, Semen Badian, Fructus Stellatus.

This is a Fruit contained in a Shell which is of the Figure of a Star; the Kernel is flat, and of a very agreeable Tafte, fomething like Annifeed. It is highly efteemed in China, and all over the East. It is used to cure any bad Tafte in the Mouth, as a Prefervative against the Effects of bad Air, and also for the Stone and Gravel. The Indians likewise steep this Fruit in Water, and afterwards ferment the Infusion; and thus make a kind of Vinous Liquor. The Dutch in the East-Indies, as well as the Natives of these Countries, mix this Fruit with their Tea and She bet.

5. Aracus

5. Aracus Aromaticus, Vanilla Officin. Vanillio.

This is the Fruit of a Mexican Plant, named by Ray Volubilis Siliquosa, Plantaginis folio, Mexicana. Two Kinds of it are brought from Hispaniola; one with a narrow Pod, which is most commonly used; the other with a longer and broader Pod, not so much esteemed. It is used in Chocolate, both as a Persume, and to affist the Digestion of the Cacao; however, Chocolate made without Vanillios is much less heating, and much more who esome. The Spaniards use it likewise from half a Drachm to a Drachm, in some Cordial Water, or in Milk.

6. Areca Officin. Fanfel Pinang Bontii.

This Fruit is a kind of Cocoa Nut, containing a woody Kernel, inclosed by two different Substances. The *Indians* chew the *Areca* rolled up in a *Bitel* Leaf, to help Digestion, and to strengthen the Gums, as *Kæmpser* relates. When fresh it is a little Astringent; and of this Fruit the Extract is made, which in our Shops is called *Terra Japonica*. To this Extract they sometimes join that of another Plant, named *Lycium*, and also calcined Shells.

7. Baccæ Bermudenses, Pilulæ Saponariæ Anglorum.

This Fruit, when fresh, is of a black Colour, inclining to red, and something transparent. As it grows old it turns still blacker. It contains a yellowish Kernel, the Taste of which is disagreeable. This Kernel steeped in Water raises a Froth like Soap, and this Insusion is used in Chloroses, and in Obstructions of the Liver.

8. Ben sive Glans Unguentaria Officin.

This Fruit was termed Glans Unguentaria, because it-yields an Oil by Expression, used by Persumers, in persuming other Oils, and never turns rancid. It is thought proper in the Itch, and some other

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cutaneous Difeases, as being a good Detergent; and it is sometimes mixed with Bismuth and white Præcipitate. Some say, that this Oil mixed with a Hazel Nut, or Filbert, and taken in this manner, will purge upward and downward; and it is certain that the Fruit itself, made into an Emulsion, is purgative.

9. Becuiba Nux.

This Nut is as large as a Nutmeg, and of a brown Colour. It confifts of an oily Kernel, inclosed in a woody brittle Husk. A Balfam is drawn from it, very much esteemed in Rheumatick and Paralytick Cases. It is brought from *Brazil*.

10. Cacao Officin.

We have two Sorts of Cacao, that of the Islands, and that of Caracca or Nicaragua, and of each there is a large and a fmall Sort. About thirty Nuts (as they are called) are commonly contained in one Fruit. Chocolate is made by first torrefying these Nuts, to attenuate the Oil they contain, and afterwards they are made into a Paste, which ought to be of a brownish Colour, not black. Chocolate thus made fweetens the Blood, and being mixed with Milk without any Spices, may be given very properly in Confumptions. It is therefore to be remembred, that Chocolate has very different Effects in heating, or in only nourifhing and ftrengthening, according to the Degree of Torrefaction it has undergone, and the Spices mixed with it; and good Judges fay, that the two Kinds of Cacao mixed together make the best Chocolate.

11. Coffee Officin. Cabve Tartar.

Coffee is the Fruit of a Tree which grows in Arabia Felix, and is brought to us from Mocha. The Flower of this Tree is like the Jeffamine Flower, and the Leaf like the Bay Leaf. The Tree is called

called on these Accounts by M. De Jussieu, Jasminum Arabicum Lauri solio, cujus Fructus apud nos Cosse dicitur. We may distinguish two Kinds of Cosse, one small and greenish, like Horn; the other large, and yellowish. This latter Sort is the least valued, and grows in the Island of Bourbon. Cosse enlivens the Blood, cures Head achs, sometimes promotes the Menses; and therefore they who are subject to large Hæmorrhages or an Erysipelas ought to abstain from it; for till then they can never be cured. It is likewise hurtful to vapourish People, and to those of a bilious Constitution; but agrees well enough with the Phlegmatick. It certainly accelerates the Motion of the Blood, and has been often observed to cause Bleeding at the Nose.

12. Cardamomum Officin.

There are three Kinds of Cardamoms. 1. Cardamomum Majus, which grows in a Husk or Pod, about the Size of a Fig; and is called Malaguetta, or Grains of Paradife. 2. Cardamomum Medium Matthiol. This Kind, as well as the former, are little used in Physick. 3. Cardamomum Vulgare Officin. Minus Matthiol. & Bontii This Kind is much used, the Seed being commonly first separated from the Husk. It is attenuating and cordial, and enters into many Compositions of these Kinds. It is used by the Indians to season their Food. The Chinese have a 4th Sort, which they use in the same manner as the Indians do the third.

13. Carpobalsamum Officin.

This is the Fruit of the Xylobalfamum mentioned in the third Section. It is nearly of the fame Size with Cubebs, and is aromatick, cordial, stomachick, &c. The Juice of this Tree is termed Opobalfamum.

14. Caryopbilli Aromatici. Cloves.

Cloves are the Foot-stalks or Calices of the Flowers of the Clove-tree, pluck'd before they are sull blown. The Fruit which succeeds these Flowers, when suffer'd to ripen, are in some Dispensatories termed Autophylli; and the Hollanders preserve them with Sugar. Cloves kept in a Cellar or any other damp Place, will increase very much in Bulk and Weight. They contain a great Quantity of Essential Oil, and are heating to a very great degree; they ought therefore to be used sparingly.

15. Cassia Fistula, seu Solutiva Officin.

The Arabians first imploy'd Casha in Physick; for neither the Greeks nor Romans feem to have known it. There are at prefent three forts of Casha. (1.) Cassia Alexandrina, sive Orientalis, which is the best of all, and therefore commonly order'd in Prefcriptions; but being very rare, the fecond fort, or the Cassia Americana is generally substituted for it. This kind is more difagreeable, more acrid and griping than the former; but as it was transplanted from the Levant into the American Islands, it ought not properly to be reckon'd a different kind. The third kind is the Cassia Brasiliensis Purgatrix. This, while green, is aftringent, but when ripe, purges more than either of the other forts; and M. Tournefort observes, that its purgative Quality, compared with the Alexandrian Cassia, is as two to one. It is likewise much larger, and the Pulp much more acrid.

Cassia is a good and mild Cathartick, especially when Purging is on any account judged necessary, where the Patient is threatned with an Inflammation, either in the Thorax or Abdomen; because it abates the Acrimony of the Fluids. It is charg'd with operating slowly, and generating Wind; but both these

these Inconveniencies may be prevented by giving it in Decoction; and when taken in this manner, it is not hurtful even to Hypochondriacks. It is often mix'd with Tamarinds and Manna very properly. The Dose in Substance is from half an Ounce to an Ounce and an half; and in Decoction from two to four Ounces. When given in the Quantity of one Drachm in the Evening, it just keeps the Body open. It is often join'd with Emetick Tartar, to moderate the Effects of that Vomit. In fine, it is a proper Purge in all inflammatory Cases; which cannot be said of any other known Cathartick.

16. Cocci Orientales, Cocculæ Officinar.

This is a Fruit almost round, of a dark Colour, brought from the Levant and the Coast of Malabar, and belonging to a Tree named Solanum Racemosum. Taken inwardly, even in the Quantity of four Grains, it causes Hickups, Nausea's and Faintings, and in a greater Dose, is poisonous. The Powder of it sprinkled on the Head, kills Vermin, and when made up into a Paste with common Flower and new Cheese, it will intoxicate Fish, so that they may be catch'd with the Hand. Some Persons are afraid of eating such Fish; but Experience has proved that their Apprehensions are without Foundation.

17. Colocynthis Officin. Coloquintida.

Coloquintida is brought from feveral Places of the Levant, and particularly from the Island of Crete. The Pulp of this Apple is very bitter and purgative, but the Seeds have neither of these Qualities in so great a Degree, except they have touch'd the Pulp; for then they become very bitter. Coloquintida taken in a large Dose, is one of the most violent Purges now known. It not only often brings, away pure Blood, but also produces violent Y 4 Cholicks,

Cholicks, Convulfions, Ulcers in the Intestines and fatal Hypercatharses. When the Pulp is taken in Substance, it sticks to the Coats of the Stomach and Intestines; and therefore it has been judged convenient to divide it as much as is possible. Thus having first reduc'd it to a fine Powder, it is made up into Lozenges called Trochifci Albandal; but even these are hurtful to Persons of weak abdominal Viscera. When it is thought proper to give it in Clysters, it ought to be boil'd in a linnen Rag, that no large Pieces of the Pulp may mix with the Decoction. These Clysters are often ordered in Apoplectick Cases. Some fay that Coloquintida will purge Children, by being reduced to a Paste with Ox Gall, and applied to the Navel.

18. Cubebæ Officin. Cubebs.

We do not know the Plant which produces this Fruit. They are brought from the Island of Fava, and other Parts of the East Indies. They are round, like Pepper, of a greyish Colour, and aromatick Taste. They are recommended in a Hoarsness and Lofs of Voice, especially when the Tonfils are stuffed and obstructed. The Dose is from ten to twenty-four Grains in Substance, to be chewed; or from a Drachm to a Drachm and an half in Infusion,

19. Folliculi Sennæ.

These are the Fruit of the Senna Tree, and purge in a lefs Degree than the Leaves. The common Dose is from three to fix Drachms in Infusion or Decoction.

20. Myrobalani.

There are five kinds of Myrobalans, termed Citrinæ, Chebulæ, Belliricæ, Emblicæ, and Indæ. The yellow are the most valuable, and most in use. They purge gently, and strengthen the Intestines at the ofame.

fame time; and therefore are very proper in Diarrheas and Dyfenteries, and make a good Succedaneum for Rhubarb, only the Dose must be larger; and they may likewise be very conveniently mix'd with Rhubarb.

21. Nux Meschata. Nutmeg.

Nutmegs are of two forts;

1, Nux Moschata subrotunda, sive Nux Myristica Clusii, sive Nux Moschata Famina. This kind is the best, and most commonly used. The whole Fruit is much of the Size and Figure of our Peaches; but the Pulp is closer. The Kernels yield a fine Oil by Expression, and the Film or Coat by which it is immediately inclosed, is the Mace. Both Nutmeg and Mace are strengthening, cephalick, stomachick, cordial, &c. They help Digestion, take away stinking Breaths, refift Corruption, &c.

2. Nux Myristica Mas, sive oblonga, C. B. P. This kind refembles the former in Colour and Confistence; but it has but little Smell or Taste, and is of an oblong Figure. Both Kinds are imported by the Dutch, chiefly from the Island Banda. It is a common Practice in France, to carry a Piece of Allum and a male Nutmeg together, in a Satin Bag, hung about the Neck, as a Preservative against

the Gout and Costiveness.

22. Nux Vomica.

This is a flat, roundish Fruit, cover'd with a thin filver-colour'd Skin, which incloses a hard Kernel. The Tree that bears this Nut, grows in the Island of Ceilon, and along the Coast of Malabar, being named Caniram Hort. Malebarici, and Malus Malabarica fructu orbiculato, &c. Raji Hist. The Wood of this Tree is the Lignum Colubrinum, mentioned above. The Fruit is of a bitter Taste, and is a Poifon for Brutes, fuch as Dogs, Cats, &c. Some pre-

tend that it does not poison Men, but this is not to be depended on. It is probable that its poisonous Quality is owing to its great Bitterness, which makes an insupportable Impression on the Nervous System; and accordingly we find that all bitter Drugs are Poisons for some kind of Animals. Thus bitter Almonds kill Birds, &c.

23. Nux Vomica legitima. Faba Santti Ignatii. Faba Purgatrix.

This is the Fruit of a Tree that grows in the Philippine Islands. Its Substance is like Horn, and its Taste very bitter. It is described by Father Camilli, in the Philosophical Transactions. The Indians of the Island of Lucon look upon it as an universal Remedy; but it is too rough a Purge for the Europeans; for the it often carries off Fevers, yet it causes Convulsions and other Disorders, and therefore ought never to be given to those who have weak Bowels. It may be given in Powder from ten Grains to a Scruple, in a Glass of Wine, or of any simple cordial Water; and then it commonly operates by Sweat, and thus cures intermitting Fevers, &c. The Dose may be repeated ten or twelve times.

24. Piper Indicum. Pepper.

The ripe fresh Fruit is about the Size of a large Currant, or small Gooseberry, and of a red Colour, which in drying turns to black. The common White Pepper is only the Black stripp'd of its outer Skin. This is done by first steeping it in Sea Water, then drying it, and rubbing it in Sand. There is however another kind of Pepper, which is naturally white, but which in all other respects is like the black.

Pepper is very good in Indigeftions, a few Corns being fwallowed before Meals; and it very often

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has been found to keep the Body open, in those who were otherwise costive, when taken in this manner.

25. Piper Longum. Macro-Piper. Long Pepper.

This is the Fruit of a Tree which grows on the Coast of Bengal. It has the same Qualities with common Pepper, but is not so pungent.

26. Piper Jamaicense. Jamaica Pepper.

The Tree that bears this Fruit, grows in Jamaica. The Grains or Berries are about the Size of Juniper Berries, and of an Aromatick Tafte, which partaking of that of all the other Spices, it has by the English been called All-Spice. It is used to feason Food, and is esteemed good for the Scurvy. The Essential Oil drawn from it is very much valued.

27. Piper Æthiopicum Officin. filiquosum, J. B. Nigrum oblongum, J. B.

The Negroes use this in the room of common Pepper.

28. Ricini Americani majoris Grana.

These Seeds are distinguish'd from the Grana Telli, by a small black Speck at one End, which the others have not. They purge violently; but if the Skin, with which they are cover'd, be carefully taken off, they lose their purgative Quality, and may be eaten with Safety. From not knowing this Secret, new Comers into America are often catch'd by the Natives. These Seeds are an Ingredient in the Pilulæ Magistrales of Rotrou, which are esteemed in Scrophulous Cases.

29. Ricini Americani minoris Grana. Avellana Purgatrix Riverii.

This is a much more mild Cathartick than the former, and that Quality refides intirely in the Skins;

Skins; for when these are taken off, the Seeds may be freely eaten. An Oil drawn from this Fruit is said to purge Children, by being rubb'd on their Navels, and thereby to kill Worms.

30. Telli Grana, seu Tellia Officin.

This is a very violent Purgative, both upward and downward, in fo fmall a Quantity as two Grains; and therefore it is feldom used in Europe. The Cathartick Quality is said by Herman to reside in the Pellicle that separates the two Lobes.

31. Ricini vulgaris Grana, seu Grana Palmæ Christi Kiki.

These Seeds are much less purgative than the former Sorts. Ten or twelve Grains will only purge gently. The Oleum Ricinum, a great Resolvent, and recommended in Rheumatisms, is drawn from them. This Oil is likewise used in many Cutaneous Diseases.

32. Stapbidis Agriæ semen. Staves-acre.

These Seeds are triangular, blackish on the Outside, white within, and of a bitter Taste. They purge strongly, taken in the Quantity of twelve or fifteen Grains, and they are likewise recommended to kill Vermin.

33. Semen Zina, Semen Cinæ, Semen fanctum, Semen Zedoariæ, Semen contra vermes, Semen Santonicum, &c. Worm-Seed.

Lippi names the Plant that bears these Seeds, Absynthium breve Santonicum, Memphiticum, &c. Tavernier and Kæmpfer say, they come from the Kingdom of Boutan in Asia; and Kæmpfer has related the manner in which they are gathered. The Taste of them is bitter; they cut the thick Phlegm lodged in the Stomach,

Stomach, and are excellent against Worms; but even in these Intentions, Rhubarb is better.

34. Tamarindi Officin. Tamarinds.

This is the blackish Pulp of a Pod, something like common Beans. The Pulp lies between two Husks or Shells; one of which is woody, the other tough and membranous. The Tree which bears this Fruit, grows in Ægypt and in both Indies, and is described by Tournefort, in the Memoirs of the Royal Academy of 1699. We owe the Knowledge of this Purgative to the Arabians; for neither Greeks nor Romans knew any thing of it. The Dose in Substance is from an Ounce to an Ounce and half; and three or four Ounces in Decoction. Some Physicians order a Tamarind Whey, Serum Lastis Tamarindinatum, as a gentle Purge in inflammatory Dispositions, Cholicks, &c. and Tamarinds are very properly mix'd with Caffia. They may likewise be given as an Alterative, in the Quantity of half an Ounce; and they are very proper to be mix'd with Ptifanes, and other Liquors, given to quench Thirst in Acute Distempers.



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SECT. VI.

Juices.

THE Juices of Plants may be divided into two general Classes, Artificial and Natural. The Natural Juices are of three kinds, Resins, Gums, and Gum-Resins; and each of these again are either Solid or Liquid.

CLASS I.

Juices extracted from Plants by Art.

1. Acacia Vera Officin.

THIS is the Juice of a Plant named Acacia folios Scorpioidis Leguminosa, C. B. P. It is imported in Cakes of four, five, or fix Ounces, which when recent are of a reddish Colour, but grow hard and black with Age. It is extremely rough and astringent, and consequently proper in Hæmorrhages, Diarrheas, Dysenteries, &c. It is given in Substance from a Scruple to a Drachm; but the German Acacia, or inspissated Juice of Sloes, is often substance for it. It is also used as a Gargle to brace the salival Glands and Uvula when relaxed, and as a repellent Collyrium in an Ophthalmia. It is likewise used in Egypt to strengthen the Gums, and fasten the Teeth; and they put it into astringent Baths. It is an Ingredient in the Theriaca.

2. Hypocistis Officin.

This is the infpiffated Juice of a kind of Orobanche or Parasite Plant, which grows on the Cistus Ladanifera. It is hard and black, tho' as it is imported it generally looks white, because the Lumps are powder'd with Starch, to keep them from sticking together. It has nearly the same Virtues with the Acacia, being something more astringent, tho' not so acerb.

3. Glycyrrhizæ succus. Liquorish.

This Juice is made near Tortofa in Catalonia, and is brought to us in beautiful shining brittle Lumps wrapt in Bay Leaves. The way of preparing it is this;

The Liquorish is first dried and cut in small pieces, then boil'd in Water. This Decoction, being first filtred, is evaporated to the Consistence of an Extract, which is what we call its inspissated Juice.

It is a good Emollient and Healer, proper in Coughs, and for promoting Expectoration, because the viscid Parts which it contains sheath and blunt the acrid Salts. It ought to be given in small Quantities, and often repeated, being otherwise disagreeable to the Taste.

4. Aloes Officin.

We have three kinds of Aloes, Succotrina, Hepatica, and Caballina; and they come from three different Plants. The first comes from the Aloe Succotrina Spinosa, angustifolia, slore purpureo, Breyn. which grows in Zocotra, an Island in the Straits of Babel-Mandel, where they formerly prepared the Aloes by expressing the Leaves, and then letting the expressed Juice stand in a quiet Place, till an oily

oily Substance rose at the Top. This Substance they took off, and evaporated it to the Consistence

of an Extract.

The Hepatick Aloes is that which is now commonly found in the Shops, being got from the Plant named Aloe vulgaris, C. B. P. It was termed Hepatick from the Colour, which is like that of a boil'd Liver. This is likewife brought from Asia, according to M. Herman.

The Caballine or Horse Aloes comes from a Plant named Aloe Guineensis &c. Commel. It is brought from Guinea and from Barbadoes, and is very common in England. It is easily distinguish'd from the other kinds by its Coarseness and insupportable Smell. The Name Caballina was given it, because it was

judged to be proper only for Horses.

The Succotrine and Hepatick Aloes are both very good Purges, but they rarify the Blood, and thereby cause Hæmorrhages, and other undefigned Evacuations, to those who are subject to them. This Medicine ought therefore never to be given to Women with Child, to those who are subject to Piles, &c. Again, Aloes, after its purgative Effect is over, is constipating; and therefore to fuch Persons as are inclined to be costive, Cassia is preferable. Dose is from four Grains to half a Drachm. Refinous Part extracted by Spirit of Wine, will purge violently; and the Gummy Part extracted by Water is a good Vulnerary, especially in Ulcers of the Bladder and Kidneys. The Tincture of Myrrhe and Aloes is used to prevent Mortifications in Wounds.

5. Opium Officin.

Opium is an inspissated Juice of a blackish brown Colour, sometimes reddish, of a bitter Taste, and a very disagreeable Smell. The Greeks distinguish'd two kinds of it; one got by wounding the Papaver album

album Officin, the other by Expression. The Opium which we have is of the first kind; and as it was cultivated formerly in Egypt near the City of Thebes, it has got the Name of Opium Thebaicum. If we may believe Kampfer, all the Opium now used in the East is what transudes spontaneously from the Plants in Natolia and other Places. But M. Tournefort and several other modern Travellers could find no fuch Opium among the Turks; all that they met with being the fame with what is brought to us in foft Lumps. They likewise observe that the sober People among the Turks feldom take above a Drachm in a Day; and a few Grains of that Quantity is always mix'd in their Coffee. In the Empire of the Great Mogul, Opium is fold as commonly in the Shops as Tobacco with us. The Inhabitants prepare it in different Manners, and mix it with different Ingredients, fuch as Rhubarb, the Extract of Rhubarb, and the like. Some add to it other Narcotick Substances, such as the Datura. This last is generally the Artifice of Quacks, by which they who take this Mixture, are thrown into pleafing Dreams, which they take for Extasies, and believe to be real. Kampfer relates many wonderful Effects of this Preparation, which he terms, The Indian Nepenthe:

The Effects of Opium are always Narcotick, whether taken inwardly, or applied externally; and it has been found to cause Sleep when given in a Clyster, better than when taken by the Mouth. When applied to the Eyes and Ears, it has caufed Blindness and Deafness; and Galen relates that an Opium Plaister laid on a Gladiator's Head by a Stratagem of his Enemy, kill'd him in a little time afterwards. This Author likewife fays, that he never used Opium; except in very pressing Cases. Opium does not make the Pulse quicker or harder than it was before, but only greater, and heats very much; which is a fure Proof, that it dissolves and rarisfies

the Blood; and this appears likewife from its caufing an Itching in the Skin, and fometimes Sweat. It is observed of the Turks, who are kill'd in Battle. that as foon as their dead Bodies are moved from the Places where they fall, they begin to bleed, their Blood being made more fluid by the Opium which they take. By this Rarefaction of the Blood in the Vessels, the Nerves, which lie near these Vessels, are compress'd; and thus the Course of the Animal Spirits is stopp'd, as is likewise the Secretion of many Fluids, fuch as the Bile and Urine, which occasion Costiveness, and the making of very little Water. Opium, in all probability, acts by its Narcotick Sulphur, which divides and rarifies in an extraordinary manner the fulphurous Parts of the Blood; and accordingly we observe all Vegetables which contain an Oil of this kind, fuch as Nutmeg, Saffron, &c. produce in the Body an Effect of the same nature with that of Opium. Neither is it at all unfeafible, that Sulphurs should be capable of a very great degree of Rarefaction, fince the Smell of Musk or Ambergris may extend through fo large a Space. Pitcairn was of opinion, that the Effects of Opium were owing to its volatile Salt; but it feems to contain that Principle in too small a Quantity for such Operations.

When a Person has taken too great a Quantity of Opium, the first thing to be done is, to empty the Vessels by copious Bleeding, if the Patient's Strength can bear it. The next thing is to drink acid Liquors, such as Vinegar, Lemonade, Syrup of Barberries, and such like, which coagulate the Blood, and thus give the Vessels room to contract. Smelling to Vinegar and all Aromaticks, is likewise proper; and if the Stupor be very great, Scarifications ought to be made, and Vinegar and Salt sprinkled upon the scarified Parts. Blisters and sharp Clysters answer the same Effect.

The

The Rules to be observ'd in taking Opium, are these;

1. If the Patient be Plethorick, he ought not to

take Opium, till he has loft fome Blood.

2. It ought not to be given in the Time of the Menses, Lochia, &c. of Women, nor during the usual Flux of the Hemorrhoids in Men, because it stops all these natural and healthful Evacuations. Neither ought Opium to be given in every Diarrhæa, because if it be critical, the Stoppage thereof may be very hurtful. It must likewise be very improper in a Suppression of Urine; and the general Rule is, that when the Suppression of any one Evacuation by Opium is foreseen, other Evacuations, especially by Bleeding, ought to succeed.

3. Opium ought never to be taken on a full Stomach, because it hinders Digestion, and proves commonly emetick. The Digestion ought therefore to be compleated at the time of taking it; and the same thing is to be said of all other Narcoticks, which given unseasonably and for a long Continuance of Time, quite destroy the Appetite, bring on Hick-

ups, Nauseas, and habitual Vomitings.

4. Perfons who begin to take Opium, ought to venture only on a very small Quantity at first, because the Effects of the same Quantity on different Persons are very different; and there is no way to determine but by Experience how much any Person can bear. Half a Grain has been found to cause Sleep for twenty-sour Hours together, to a Person who afterwards required half a Drachm to produce half that Effect. For it is a certain Observation, that they who accustom themselves to take Opium habitually, must often increase the Dose, otherwise it gradually loses its Effect on them; and M. Geoffroy knew a Woman who took seventy-two Grains every day, meerly to ease the Pain of a cancerous Breast. The common Quantity among the Turks

is a Drachm in a Day; but some among them take

a much greater Quantity.

The Ancients were extremely cautious in giving Opium; but in the beginning of the last Century Felix Platerus, a learned Physician of Basle in Switzerland, began to bring the Use of it into Vogue. Silvius de le Boe, Professor of Physick at Leyden, persected what Platerus began; and from that Time many of the most famous Physicians in Europe, such as Sydenham and others, sound by certain Experience that it was one of the most valuable Medicines in the World, when prudently administred, in calming the too violent Motion of the Blood, easing Pain, &c.

There are however still some very great Men, who continue Enemies to Opium, and among these M. Stabl has declar'd himself, in his Dissertation De Imposturis Opii. They are afraid to use it for the ends just mentioned, for fear of suspending the Crisses which commonly happen after violent Pains, such as those of the Gout and Rheumatism, and in acute Distempers, in which the Fluids are violently agitated; they apprehend, that by giving Opium to diminish these Motions, they only throw a Veil over the Distemper, which hinders them from observing its true Genius, and the Tendency of Nature in the Course of it. Of this they cite Pleurisies as an Example, and they are certainly in the right not to give Opium in that Disease.

But notwithstanding all the Strength of these and other Reasons against the Use of Opium, and the Authority of those who advance them; this Medicine is undoubtedly very proper on many Occasions, as in great want of Sleep, too great Motion of the Fluids, occasion'd by purgative and other Kinds of Medicines, in great Desluxions, stubborn Coughs,

Egc.

6. Saccharum Offic. Sugar.

Sugar is the Essential Salt of the Arundo Saccharifera, or Sugar Cane; the different Kinds of which are these,

Muscovado, the first Sugar, got from the Juice of

the Canes.

Caffonado, Sugar refined from the former by the Whites of Eggs, Lime-water, &c. which being more oily than the more refined forts, is to be preferred for all inward Uses. It is likewise most proper for Confectioners, because it does not candy so

eafily.

Loaf Sugar, Cassonado still further refined and clarified in different degrees. It has the same Qualities with the former, but in a less degree for inward Use. They both cut Phlegm, promote Expectoration, and animate the Blood; but they excite Vapours and the Tooth-ach. They who use much Sugar, are liable to Fevers and to rotten Teeth. In Brasil, the Skimmings of Sugar are given to the Hogs, by which they are soon fatten'd, and their Flesh becomes very delicate.

Sugar Candy, or Crystals of Sugar, is of three kinds, white, yellow, and red; which are only the three former forts, boil'd to a due Consistence. White Sugar Candy comes from the Loaf Sugar; yellow from the Cassonado, and red from the Muscovado. Sugar Candy is most proper in Colds, because it melts slowly, and thereby gives time to the Saliva to mix with it, and thus to blunt the Acrimony of

the Phlegm.

Red Sugar. This was used very much formerly in Looshesses; but at present Oil of sweet Almonds and other Things of that kind are substituted for it.

Syrup of Sugar, or Molosses, is the glutinous Part which drains from Sugar, and was formerly used for the red Preserves or Sweet-meats; but it gave them

a difagreeable burnt Tafte. In the West-Indies they ferment and distil it; but the Brandy or Spirit which it yields is unpleasant and very intoxicating. A much better Spirit might be made of refined Sugar.

To these we may add the Saccharum Acernum, Maple-Sugar; which is the Product of Canada and New England, in which Countries the Natives collect the Juice that runs from a kind of Maple-trees, by Incision, and then evaporate that Juice to the Consistence of Sugar, which while it remains unctuous, is better for internal Use than any other kind; and the samous Syrup of Maidenhair of Candia is made with it. As it is brought to us, it is of a greyish Colour, and tastes like other Sugar. With this Sugar the Inhabitants of these Countries prepare likewise a fort of Liquor which is their common Drink; and likewise make Brandy and Vinegar from it.

7. Tartarus vel Tartarum Offic. Tartar.

Tartar consists of the acid, oily, and earthy Parts of Wine; and the Lees of Wine are Tartar attenuated and divided into Wine by Fermentation. Tartar may therefore be called the Essential Salt of Wine. White Tartar contains the greatest Proportion of Acid, and Red Tartar most Oil and Earth.

Under this Head may be reckon'd

1. Cineres Clavellati, Pot-ash; one kind of which consists of the earthy Part of the Lees of Wine, burnt to Ashes, which by melting afford a Salt like Salt of Tartar.

2. Kali, Soda. This Soda is made by calcining different Plants. In hot Countries they chuse the Kali majus cochleato semine, C. B. P. and at Alicant, the Kali Hispanicum supinum, soliis brevibus, Dn. de Justieu. It contains a small Portion of Salt, like Sea Salt, mix'd in a great Quantity of Alcaline Salt; and

and Crystals may be obtain'd from it in Cubes like

Sea Salt. 3. Fel Vitri, Sal seu Axungia Vitri. This is the Sea Salt of the Soda, which is eafily foluble in Water; and of this Solution the Farmers make a Wash for Horses Eyes.

8. Heliotropium. Turnfol.

We have two kinds of this Juice, one in Lumps, the other in Rags. The Plant which produces it grows in Languedoc, and is a kind of Ricinoides, called by C. Baubin Heliotropium Tricoccum. The Juice being express'd, linnen Rags are impregnated with it, and then exposed to the Vapour of Urine, which gives them a red Colour. These Rags are exported to Holland, where they extract the Lumps from them by a Method, which is hitherto a Secret. It is probable however that they are a kind of Facula. The Tincture of Heliotropium or Turnfol ferves in Chemistry, to try Acids and Alcalis, but is not used in Physick. There is a third fort of Turnsol brought from Portugal, which is used by the Scarlet Dyers,

9. Indigo.

This Juice is brought both from the East and West-Indies, made up in different Forms. The most esteem'd is that of Guatimala; which is the Facula of a Plant termed Emerus Americanus siliqua incurva, I. R. H. Some Physicians have recommended Indigo in the Jaundice, taken in the Quantity of a Drachm; but others look upon it as a Poison, and in Saxony the internal Use of it is prohibited.

10. Alciot sive Uruba Indorum.

This Juice is got from two different Plants; the first is named Mitella maxima tinstoria, J. R. H. and Orleana foliis capaceis, H. L. Bat. The other is a ZA Shrub

Shrub of the same Name with the Juice. From these two Plants insused and long macerated the Juice is obtained in form of an Extrast. The Indians use it to paint their Bodies red, and the Spaniards use it in dying; and formerly it was mixed with their Chocolate.

11. Amylum Offic. Starch.

This is the Facula of Wheat, which is first steep'd in Water till it swells, and then bruised in the same Water by Mens Feet. Then they pass the whole thro'a Searce, and the strain'd Liquor being evaporated, a Facula is left at the Bottom, which being dry'd is Starch; and when thus made, it may be used inwardly in Diseases of the Breast, and applied to the Eyes. But when made, as it often is, with Bran, mix'd with Nitre and Alum Water and Vinegar, it ought not to be used inwardly.

12. Terra Japonica.

We have one kind of Terra Japonica from Malabar, and another from Pegu. The Manner of preparing it is this.

The Areca Nuts, before they are quite ripe, are bruised, and a strong Decoction made of them. This Decoction pour'd off by Inclination, having stood for some time, is mix'd with the Powder of calcined Shells, and then deposites a Fæcula.

Another Decoction and Facula is made of a Plant called Catechu; and these two Faculæ mix'd make the simple Terra Japonica. In Spain, it is prepared with Aromaticks, which makes it very heating; which it is not of it self, and therefore the simple Kind is to be preferred for all Physical Uses. It is a mucilaginous, astringent Substance, very proper in Instammations and Swellings of the Tonsils, &c. It strengtens

itrengthens the Stomach and helps Digestion, and is very proper in Loosenesses. The Dose is from half a Scruple to sifteen Grains, repeated several times a Day. Half a Drachm boil'd in a large Quantity of Water makes likewise a very proper Drink in a Diarrhæa or Lientery, even when other Medicines have sailed.

13. Sago.

This is a Paste in small Grains, or a kind of Vermicelli, prepared from a Tree named Arbor palmam referens farinifera, C.B.P. The Pith of these Trees being well beat in a Mortar with Water, forms an Emulsion, the Fæcula of which dried is Sago. It is a very kindly and nourishing Food, never fermenting in the Stomach, and very proper in Hectick Fevers. It is very much used in England.

14. Cacavi Monaid. Manihot Thevet. Cassada.

The Plant of which Cassada is the Root is a kind of Rivinoides, and not a Juea, as almost all Authors pretend. This Root, eaten fresh and with all its Juice, is a certain Poison; but when dry, it may be safely eaten. In the West-Indies they rasp this Root; and having squeezed out the Juice from the Meal, they make it into a Paste, and then into thin Cakes, which they bake partly in the Sun, and partly over a Fire; and these Cakes are the common Bread of the Country. The Indians ferment the Juice, and then make it into Vinegar, which becomes very harmless, tho' poisonous before Fermentation.

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SECT. VI.

CLASS II.

Juices which flow from Vegetables naturally.

HESE Juices, as has been already faid, are of three Kinds, Refins, Gums, and Gum-Refins.

Refins, are inflammable Substances, foluble in Spirit of Wine, but not in Water.

Gums diffolve in Water, but not in Spirit of Wine, and when burnt, the greatest Part of them turns to a Coal.

Gum-Refins are Substances, of which one Part is foluble in Water, and the other in Spirit of Wine.

Each kind is divifible into Liquid and concreted Juices.

ART. I.

Liquid Resinous Juices slowing from the Bark of Trees.

1. Balsamum Judaicum, Syriacum, Hieruchuntinum, Constantinopolitanum, e Mecha, &c. Opobalsamum Officin.

THIS is a refinous Liquor, which at first is of the Confistence of Oil of sweet Almonds, but by Age becomes like Turpentine, loses much of its Smell, and grows sometimes blackish. When fresh, it is of a very agreeable aromatick Smell, and of a Taste like Citron Peel. The Plant, from which it flows, is called Balfamum Syriacum folio Rutæ, C.B.P. M. Lippi, fent by Lewis the 14th Ambassador to the Emperor of the Abyssines, being in Egypt, was at great pains to discover this Plant, and the ways of procuring the Balfam from it. The Substance of what he could find out is, that there are three Ways of collecting it, and that there is some Difference in the Liquors collected each way. The first runs of it felf from the Tree; the fecond, by Incisions; and the third is got by boiling the Tops of the Trees. The Balfam, that rifes first after a gentle Decoction, is very good and much esteemed; but what is got afterwards, is the coarfest fort, and of least Value. The first kind of Balsam is fent entirely to the Seraglio of the Grand Seignior; the other forts are fuffer'd to be exported. This Balfam is not now to be found in Judea, which was its ancient native Soil, and where it was very common before the Destruction of Jerusalem; but soon after that, the Jews destroyed all their Trees, left the Romans should have made Advantage of them. At prefent it is found near Mecca and Grand Cairo in Egypt, from whence it is carried to Constantinople, where it is in great esteem. In Asia it is given in the Quantity of two Scruples, as a Diaphoretick in malignant Fevers; and it is undoubtedly an excellent Medicine for deterging Ulcers in the Lungs, Kidneys and Bladder, and even for diffolving pulmonary Concretions. But the Use of it ought to be avoided in inflammatory Dispositions of these Parts, even though ulcerated. It ought likewise never to be given when there is an Eryfipelas in any Part of the Body whatever. It is used with good Success in Gonorrhea's and the Fluor Albus; being given from ten to twelve Drops early in the Morning fasting, the Patient's Body having been well prepared, and the Running having continued some time. It is used externally in Wounds without Contusion, as a Detergent. The

The Ladies in Asia use it as a Cosmetick, and especially in the Seraglio of the Grand Seignior. In France the Ladies formerly prepared a kind of Lac Virginale with the yellow Balsam of Mecca, dissolved in Spirit of Wine; but they were soon tired of this Method, because it leaves a Crust on the Face. The true Manner of preparing this Cosmetick, is as sollows;

Take Balsam of Mecca, and Oil of Sweet Almonds, of each equal Parts. Mix them well together into a kind of Nutritum. On three Drachms of this Nutritum in a Matrass pour six or seven Ounces of Spirit of Wine, and leave them in Digestion, till a sufficient Tincture is extracted. Then separate this Tincture from the Oil, and pour about an Ounce of it into eight Ounces of the Aqua Fabarum, or any other Water of the same kind.

This Mixture is a Lac Virginale, which will answer all the Intentions of a Cosmetick without any Inconveniency. The Balsam of Mecca is an Ingredient in the Theriaca and Mithridate.

2. Balfamum Copaiba. Balfam of Capivi.

When this Balfam is new, it is of the fame Colour and Confiftence with Oil of Sweet Almonds, and finells like the Calambour Wood; but the Tafte is a little acrid and bitter. It is brought from Brafit by the Portugueze, and is the Product of a Tree called Copayva, Pison. being got in three different manners, as the former. The first Kind is the best and clearest; and this Balfam is at present very much in use, being given in the same Cases with that of Mecca, and with the same Restrictions, only the Dose may be made something larger. Fuller says, that when given in the Quantity of two Drachms, it purges very well, and gives a very bitter

bitter Taste to the Urine. A Liniment may be made with two Parts of Spirit of Wine, and one Part of this Balsam, very proper to be used in Rheumatisms, Palsies, &c.

3. Balsamum Peruvianum. Balsam of Peru.

We have two kinds of this Balfam, one red, the other whitish. This last is brought us in Shells; and, when fresh, has an agreeable Smell like Benjamin, is very liquid, and of a yellowish white Colour. It slows by Incision from a Mexican Tree named Arbor Balfamisera, Hernand. The other kind is of a much browner Colour, and sometimes smells of Smoak; being procured by boiling the Bark and Tops of the same Tree, the Balfam swimming at the top. This Balfam is recommended for the same Uses with the two former, but the Balfam of Capivi is more in vogue.

4. Balsamum Tolutanum. Balsam of Tolu.

This Balfam is of a folid Confiftence, and is like-wife imported in Shells. It is of a yellow Colour, transparent, and of an agreeable Smell, especially when burnt. Being held in the Mouth, it has no Acrimony, in which it differs from all the rest; and for that reason it is preferred in England for internal Use, being given from six to eight Grains. It has its Name from the American Province where it grows, which lies between Carthagena and Nombre de Dios.

5. Liquidambar Offic.

There were formerly two kinds of this Juice, one refinous, of a yellow Colour, and a Smell like Storax or Ambergrease; the other thicker, and not so fine. They were much used in Persumes, but at

present are unknown, tho' some believe that they come from a Tree named Acer Virginianum, Herman.

6. Styrax Liquidus. Liquid Storax.

There are two kinds of Storax in the Shops; the one is of the Confistence of Oil of Sweet Almonds. of a very pleafant Smell. This is the true Liquid Storax. The other feems to be a Composition of the first Kind, mix'd with something else. It is of a more folid Confistence, and is by some Authors faid to be wholly factitious, tho' it is most commonly used. The Tree which yields the Liquid Storax, grows in the Plains of the Red Sea, being call'd by the Arabians Mio or Rosa Mallos. The Bark of this Tree is boiled in Sea Water, and the Styrax rifes to the Surface of the Decoction, such as it imported. It is an excellent external Remedy in Wounds threatened with a Mortification; and in this Intention chiefly it enters into feveral Ointments and Plaisters. The Turks use it as a Perfume.

7. Terebinthina Offic. Turpentine.

The Name of Turpentine has been given to all the Refinous Juices of four different Trees, and con-

fequently is of four kinds.

The first comes from the Terebinthus Vulgaris C. B. P. This, called the Terebinthina de Chio, or Cypria, is of the Consistence of Honey, of a very pleasant resinous Smell, and the best of all Turpentines for internal Use. It gives a violet Smell to the Urine, even when given in a Glyster. It is an excellent Diuretick, and very proper in Uscers of the Kidneys, Bladder, and Uterus. In Gonorrhæas, it is commonly made into a Bolus with prepared Crabs-Eyes, or any other Absorbent. It may likewise be taken in the Yolk of an Egg, from half a Drachm to a Drachm. All these Precautions are seces-

necessary only to shun the disagreeable Taste, and Sugar and powdered Liquorish may be used for the same Purpose. It is likewise often given in Glysters, being first dissolved in the Yolk of an Egg, and then mixed with the Decoctions. It is thus administred in Stone Cholicks, but the Intestines ought previously to be unloaded by purgative Glysters. The Dose, in this Manner, is from an Ounce to an Ounce and an half. Turpentine, like all other Balsams, is to be avoided in inflammatory Dispositions of all Kinds.

The fecond Sort is the Terebinthina Veneta, Venice Turpentine, which comes from the Larch Tree, or Larix folio deciduo C. B. P. This Tree grows on the Alps and in the Tirol. The Venice Turpentine is of a Whitish Colour, with a Cast of Green. The Taste of it is sharper, and the Smell stronger than of the former Sort; but it is much more commonly used in these Countries, because the other is difficult to be got. It has the same Virtues, but is not altogether so proper for internal Use. From this Turpentine Colophony is made, being nothing but the Caput mortuum, remaining after Distillation.

The third Kind, called Terebinthina Argentoratensis, Strasburgh Turpentine, is got from Fir-trees. It is very much used in Germany, but though its Virtues be equal to that of Venice, the Taste is more

acrid and unpleafant.

The fourth, called Common Turpentine, is got from Pine-trees. It is not used in Medicine; but is many other ways useful in Life, because from it are made the common Sorts of Resin, Pitch, Tar, &c. These are,

^{. 1.} Resina Pini Alba, White Resin, which turning yellow or reddish, is termed Resina Pini Fusca, or Thus samina Offic.

- 2. Palimpissa, the black, or burnt Pitch.
- 3. Zopissa, Pitch pick'd off from the Vessels.
- 4. Pix Burgundica, Burgundy Pitch, which is a Mixture of Refin, Oil of Turpentine and common Pitch.
 - 5. Pisselæum, Oil of Pitch or Tar.
 - 6. Pissa, another Sort of Tar.
- 7: Pix Nigra, black Pitch, which when dry becomes brittle and transparent, and is then called Pix lucida.

The Smoke of all these Substances produces a Soot called Fuligo Picea, as that called Fuligo Oleaginosa is made by the Smoke of burnt Lees or Sediment of Olive-Oil. This last Soot sticks to the Fingers when handled, and by this it may be distinguished from the former.

8. Balfamum Ipecuebæ.

This Balfam is used in Brasil for Rheumatisms. See the Sect. of Fruits.

9. Oleum Cacao.

This Oil is of a middle Confishence between Hogs Lard and Wax, and of a white Colour. It is made by bruifing the Cacao Nuts in a Mortar, and then boiling them in Water; the Oil which swims at the Top like a Cream is taken off and purified. It softens the Skin, and is a very good Ingredient in Pomatums, for Chaps and Fissures in the Lips and Nipples.

10. Oleum Palmeum. Palm Oil.

This Oil is of a white Colour, and is got from the Fruit of a Tree named Palma Conifera C. R. P. It is recommended as a Liniment in Rheumatisms and Palsies, to soften the Parts in reducing Luxations, and for strengthening the Nerves.

ART. II.

Concreted Juices, which distill from Trees, whether Resins, Gums, or Gum-Resins.

1. Afa fætida, stercus Diaboli, Σίλφιον Græcor. Lafer Latinor.

Any Authors have doubted whether our Asa fatida be that of the Ancients, which was by them called the Food of the Gods. But when we consider first the Description of Dioscorides; and, secondly, the Relations of Travellers, who say, that the Persians, Indians, and other Eastern Nations use, Asa fatida, in Sauces, and call it also the Food of the Gods, there can be Reason to question, but that ours is the same with the oscopio of the Greeks, and Laser of the Latins, mentioned by Petronius.

Asa fætida is a Gum Resin, brought to us in Lumps of different Colours, white, yellowish, blue or brown, which last is the worst Colour of all. It has a very strong setid Smell; and we are obliged to Kampser for a very exact History of the Tree, which produces it, of the Manner of gathering it, &c. In general, this Tree is of the Umbelliserous Kind, growing plentifully in the Province of Labir, in the Dominions of the Great Mogol, and

in that of Chorasan in Persia. In the Months of July and August, the Country People make Incisions in the Roots of these Trees, thro' which the Juice drains. It is whitish and thin at first, but by drying soon becomes thicker, and of a brown Colour; and in this Form it is gathered and preserved for Use.

Afa fætida is an excellent Remedy in all Hysterick Diforders, whether only smell'd to, or mixed with what is taken inwardly. It is also reckoned a good Sudorifick and strengthens the Stomach. The Dose is from twelve Grains to half a Drachm, but with a View to the Stomach only it must be given in smaller Doses. Externally, it is a good Resolvent; and in that Intention, is an Ingredient in the Ceratum de Galbano, and is sometimes tied to the Bits of Horses Bridles.

2. Bdellium Offic.

There are two kinds of this Juice in the Shops; one in great Lumps of a red Colour, and bitter Taste; the other very hard, brittle, a little bitterish, and of a strong Smell. Both forts are brought from Africa, and undoubtedly come from Abyssinia or Ethiopia; but we are ignorant of the Plants which produce them. Bdellium is a good Sudorifick, Emmenagogue, and Attenuant; and it likewise is an Ingredient in the Emplastrum Diachylon, Unguentum Apostolorum, &c.

3. Benzoinum, Asa Dulcis Offic.

This is a refinous, inflammable Substance, sometimes of a reddish, sometimes of a pale Colour, and generally very soul. When it is cover'd with white Spots, it is called *Benzoinum Amygdaloides*. It is of an agreeable Taste, a little acid, and is much used in Perfumes. It it not certain that this Juice was known to the Ancients. It is brought from the Philippine

lippine Islands, from Siam and Sumatra. M. Grimm has described the Tree which produces it, and the Manner of preparing it, in the Ephemerides Natura Curiosorum, An. 1. Dec. 2. It is very proper in Asthmas, to attenuate the Phlegm which oppresses the Lungs, and in Ulcers of that Viscus; but the Flowers of Benjamin are preferred for Internal Use.

4. Camphora, Caphura Officin. Camphire.

Camphire is found in feveral Places of the East Indies; but the two principal Kinds are those of Borneo and Sumatra. It is likewise producd in Japan; and there is a very precious Sort in the Island of Ceylon, which comes from the Roots of the Cinnamon Trees. The Camphire of Borneo is very rare, and in the Indies one Pound of it is reckoned worth a hundred Pounds of that of Sumatra, and therefore the Hollanders import only this latter Sort, which, for Medical Uses, is very little inferior to the other.

Camphire is a refinous Substance, very light, of a whitish Colour, and so inflammable, that when once fet on Fire, it will burn on the Surface of The Smell of it is very aromatick and penetrating, and when exposed to the Air, it foon wastes. The Tree that produces it in Sumatra is by Breynius named Arbor Campborifera; and by Kampfer, Laurus Camphorifera. Besides what distils naturally from the Trees, they likewise obtain it by distilling the sliced Roots with Water, in an Alembick, the Head of which is made of Straw, fo that all the Humidity evaporates through the Head, and the Camphire sticks to it. It is at first of a greyish Colour, but in refining it the Dutch bring it to a white Colour, and it is then transparent. It is refined by Sublimation, in a Sand Heat.

Camphire, taken inwardly, is Cordial and Sudorifick; and likewife Anodyne, in as much as it

removes Obstructions, which cause Pains. It is excellent in the Hysterick Passion, both taken inwardly and applied outwardly; and fome Authors have faid, that the Quantity of one Grain applied to the Navel has cured a Fit of the Vapours. It is likewise a powerful Resolvent, by its penetrating and attenuating Quality. Camphorated Spirit of Wine, made by diffolving Camphire in that Liquor, is very proper to discuss an Erysipelas, and other Inflammations of that kind. It is likewise a good Ingredient in Collyriums in an Ophthalmia, and powerfully attenuates the thick Humours which are the Causes of Rheumatisms. When carried in ones Pocket, it is a great Preservative against the Effects of bad Airs; and Plaisters with Camphire and Opium have done Wonders, where all other Remedies have failed. The Antients believed that Camphire was an Enemy to Generation, but that Conceit was very contrary to Truth.

5. Caranna seu Caragna Officin.

This is generally termed a Gum, but very unjustly, because it is dissoluble only in Spirit of Wine, which is the Property of refinous Substances. It is a foft Body, of a greyish Colour, with a little Cast of Green, brought from the Province of Mechoacanna in America, being the Product of a Tree named Caranna Monaid. C. B P. and Arbor infania. Caragna nuncupata Hernand. It is a powerful Refolvent, and in that Intention is used for Rheumatisms, for Defluxions of the Eyes, and for the Tooth-ach. For this last Distemper a Plaister of Caranna, of the breadth of a Shilling, is to be applied to the Temples on the aching Side of the Head, and if the Nerve is not bare, this generally removes the Pain. M. Fagon used to make a Plaister of this Resin for Head-achs, which he applied to the whole Scalp, first well shaved. 6. Copal

6. Copal Officin.

The Natives of America give the Name of Copal to all odoriferous Gums which are transparent. The Gum we commonly call by that Name is not much used in Physick, but is in great Esteem with the Varnishers, who dissolve it in Oleum Spicæ. It has been sometimes employed in Fumigations for violent Desluxions of the Head, and in Cucuphas for the same Purpose.

7. Gummi Anime Officin.

The *Indians* call by this Name all odoriferous Refins that are of a Red Colour; and by this Colour they are diffinguished from *Copals*. What we use is probably not the same with what the Antients called *Cancamum*. Ours has the same Virtues with *Copal*, and is used in the same manner in Persumes and Fumigations.

8. Elemi Officin.

This is a Resin, because it is soluble only in Spirit of Wine. We have two kinds of it, one called Elemi Legitimum Æthiopicum, which is at present very rare; the other is brought in Lumps from America, which is of a strong Smell, something disagreeable, and of an acrid bitter Taste. It is an excellent emollient and detergent Vulnerary, and a great Strengthener of the Nerves. It is an Ingredient in the Emplastrum Andrea à Cruce, the Balsamum Arcai, &c.

9. Euphorbium Officin.

This is a Gum Resin, which distils in milky Drops from a Plant called Euphorbium Antiquor. C. B. P. It is so violent a Purgative that it cannot safely be taken inwardly; but when dissolved in the Yolk of an Egg, and afterwards diluted with Oil of sweet Almonds, some venture to give it as a Clyster,

in the Quantity of twelve Grains, in Lethargick Cases, and stubborn Palsies. It is likewise used in some Snuffs, mixed with Tobacco, but it would be better to mix it with Juice of Liquorish. Euphorbium may also be used to separate the carious Parts of Bones.

10. Galbanum Officin.

This is a Gummi-Resinous Substance, which distils by Incision, from the Plant named Ferula Galbanisera. It is a very good Anti-hysterick, Emmenagogue, and forcing Medicine; and even when applied in a Plaister to the Navel, will cure Hysterical Convulsions. It is likewise sudorifick, when taken inwardly; and, when outwardly applied, it softens and digests Tumours, and brings them to Suppuration. For inward Use it ought to be strained, but not for outward. It is the Basis of the Ceratum de Galbano, and is an Ingredient in the Emplastrum Matricale.

II. Gummi Ammoniacum.

We do not know the Plant which yields this Gum. It is a powerful Refolvent, and Purgative in a small Degree. It removes Obstructions of the Viscera, especially of the Uterus, and thus is both a good Emmenagogue and Aperient, when given from a Scruple to half a Drachm; and is very proper to be mixed with Preparations of Steel, and Flowers of Sal Ammoniac, in Pills or Bolus's. Outwardly applied it is a good Resolvent.

12. Gummi Arabicum. Gum Arabick.

It is foluble in Water, but not in Spirit of Wine. It flows naturally from the Acacia Ægyptiaca, fometimes like finall Worms, whence it is called Vermiculatum. It is emollient and diuretick, and used in many Compositions for Diseases of the Thorax, because it sheathes the sharp Parts of the Serum in the

the *Bronchia* by its mucilaginous Parts; and, by the fame Means, becomes ufeful in Difeases of the Kidnies, Uterus, and Bladder. On this Account, it is given in a Dysuria, Strangury, Heat of Urine, $\mathcal{B}_{\mathcal{C}}$.

13. Gummi Nostras. Cherry-tree Gum.

This is supposed to have the same Qualities with Gum Arabick.

14. Gummi Guajaci.

This Gum runs through the Cracks of the Lignum Vitæ Tree; and some Physicians make use of nothing but it and the Mercurial Panacea, for the Cure of Claps.

15. Gummi Gutta, Cambogium, Gutta Gambe, Gutta Gamandra. Gamboge.

This is a Gum Refin, which flows from two different Plants in the East Indies; but, notwithstanding all that is faid by Herman, and by the Authors of the Hortus Malabaricus, we are still uncertain what these Plants are. This Gum communicates a fine dark Gold Colour to the Water in which it is diffolved. It purges very well in the Quantity of four Grains; but, from fix to eight Grains, it purges and vomits violently. It is reckoned particularly ferviceable in Dropfies, by evacuating the Watery Parts of the Fluids; and as it has no Tafte, a very fmall Dose of it, fuch as a Grain or two, diffolved and mixed with Sugar, is very fit for Children. It is worthy Observation, that though this Gum is fo very purgative, yet the Fruit of the Tree to which it belongs is perfectly harmless, and is eaten in the Country like Oranges.

16. Gummi Hederæ. Ivy-tree Gum.

This Gum comes from a Plant named Hedera Arborea. It is neither Caustick nor Depilatory, as A a 4 the

the Ancients imagined, but a powerful Refolvent and Discutient, in which Intentions it is an Ingredient in several Plaisters, and in the Unguentum Dialtheæ.

17. Labdanum seu Ladanum Officin.

This is a foft refinous Substance, of a blackish or brown Colour. It is imported in Lumps and Cakes, rolled up much in the fame manner with fmall wax Candles; but this latter fort is least esteemed, being mixed with some other Substance. It flows from a Tree named Ciftus Ladanifera Cretica flore purpureo, 7. R. H. In the Time of Diascorides it was gathered from the Hairs of the Goats, which fed among the Trees which produce it; but at prefent, according to M. Tournefort, the Greek Monks gather it from the fame Trees with a fort of Rakes. The Greek and Turkish Ladies carry little Balls of Ladanum to fmell to, as ours do Nosegays or Oranges. It is an excellent Balfamick in Dyssenteries and Hoarseness; and being likewise aftringent, it strengthens the Stomach and Intestines, and when applied outwardly in Plaisters, is useful in the same Intentions. Emplastrum stomachicum of Charas, of which Labdanum is the Basis, has been used with great Success to stop habituated Vomitings. It is also an Ingredient in the Prior of Cabriere's Plaister for Hernias.

18. Manna Officin.

This is the Product of a kind of Fraxinus, or wild Ash, which grows in Calabria, named Fraxinus Rotundiore folio, C. B. P. It is a melleous Juice, of a solid Consistence when dry, and in the middle of the little Lumps there are sometimes small Straws or Rushes, and when broken, they appear porous and crystalline; And as this cannot be imitated by Art, such Manna may be depended on to be genuine. The other Kind is often mixed by the Druggists with a small Quantity of Scammony, to make it more purgative; but as Scammony is not always

proper, where Manna is prescribed, the former kind ought to be preferred. In a large Dose Manna causes Thirst, by dissolving and præcipitating the falivary Secretions; but this Accident is remedied by proper Drinks. Manna purges off the ferous Humours more and better than any other Cathartick, and is therefore fuccefsfully used in Dropsies, mixed with aperient Salts, the Activity of which is moderated by Manna. The Dose is from one Ounce to four Ounces, given in Broths or other Drinks. It is fometimes ordered by the Name of Mel Aereum, because some have believed it to be a Dew. It was first discovered by the Arabians, having been unknown to the ancient Greeks and Romans.

19. Mastiche Officin. Mastich.

Mastich is a Resin of a transparent Gold Colour, and when burnt, of a very agreeable Smell. It may be chewed, like Wax, whereas Sandaracha breaks under the Teeth, and by this these two Substances may be distinguished. It slows from the Lentiscus Vulgaris, C. B. P. which is cultivated with great Care in the Island of Chio, and it is there forbidden, under Pain of Death, to cut any of the Trees. The Turkish Ladies chew Mastich to preserve their Teeth, and strengthen the Gums. It is used inwardly, from half a Scruple to a Drachm, in Diarrhæas, Hæmorrhagies, &c. being an excellent Aftringent and Stomachick. It is an Ingredient in many purgative Compositions, as a Corrector, and makes the Basis of the Emplastrum de Mastiche, &c. In Defluxions of the Teeth it is ordered to be chewed to cause Spitting; and mixed with a fmall Quantity of Opium it is a Plaister, and applied to the Temporal Artery of the pained Side of the Head, it generally cures the Tooth-ach.

20. Myrrha Troglodytica Officin. Myrrhe.

Myrrhe is brought from Æthiapia and Arabia Falix; but we are ignorant of the Tree from which

it flows. It is an excellent Stomachick, good in Indigestions, Aperient, Deobstruent, Emmenagogue, Aftringent, Vulnerary, &c. and is used in Loosenesses, to destroy the Acrimony of the Humours in the Intestines. Outwardly applied it is a powerful Refolvent, and the Tincture of Myrrb and Aloes is a good Vulnerary, and prevents Mortifications. Myrrh put into the White of a hard Egg, in the place of the Yolk, and laid in a cool Cellar, resolves into an Oil per deliquium. It is an Ingredient in many Compositions, such as the Emplastrum Divinum, Emplastrum Stieticum, Theriaca, &c. It is generally chosen ungulated, that is, marked with fmall white Specks, in the Shape of Nails. The Ancients mention a Liquid Myrrh, which we are ignorant of; there is, however, fome Ground to think that it is an oily Liquor found in the Body of the Tree; and this was the Myrrh offered by the Magi to our Saviour, because it was very precious, and an Ingredient in the richest Perfumes.

21. Olibanum Officin. Thus Mas, Mamma Thuris, Olibanum Mammosum, sive Testiculosum.

The Tree that produces this Incenfe grows in the Heart of Africa, but we know not what it is. It is a good Sudorifick, and has by fome been ordered in Pleurifies in the Quantity of a Drachm, being first baked in an Apple, by the Fire-side, and then eaten. This Medicine ought to be taken in the Beginning of the Difease, after the Patient has been blooded once or twice. This Method was followed for a whole Year at the Hotel Dieu, by M. Hangard, Physician of that Hospital, with furprising Success; but the next Year it had scarce any Effect at all. Olibanum is likewise Cordial, and very ferviceable in Hæmorrhages when mixed with proper Astringents. Externally, it is Resolvent, Émollient, &c. and resists Putresaction. It may lekewife

likewise be used as a Fumigation to raise Sweat, in Rheumatifms, either alone or mixed with Amber.

22. Opoponax Offic.

This is a Gum Refin, got from a Plant named Panax Heracleum, J. B. As it flows through the Cracks of the Trees, it is of a yellow Colour, but by Age it turns red. It is of a sharp, bitter, disagreeable Tafte. Outwardly applied, it is emollient, attenuant, and refolvent; but internally it is purgative, uterine, antihysterick, carminative, &c. The Dose is from twenty Grains to a Drachm, and it is an Ingredient in many Compositions.

23. Sagapenum Offic.

The Tree that produces this Gum Resin, is believed to be a Ferula. It is purgative, attenuant, aperitive, and proper in Obstructions of the Mesentery, in Vapours, and to provoke the Menses. Dose is from twenty Grains to a Drachm. Outwardly it has the fame Qualities with the foregoing.

24. Sandaracha Offic. Vernix Arabum.

This is a Gum Refin, which flows from the Cedrus Lycia major Dodon. It is attenuant and refolvent, but is feldom used in Physick, though very much by the Varnishers, being first dissolved in Spirit of Wine. It is likewise used to embellish Writings, being first scatter'd on the Paper, and afterwards rubb'd with a Wolf's Tooth; for by this means the Paper continues to bear Ink, and all Erafions disappear. It is fometimes confounded with Juniper Gum, and is very different from that kind of Orpiment, which was the Sandaracha of the ancient Greeks; of which above.

25. Sanguis Draconis Offic. Dragon's Blood.

This is the Juice of the Draco Arbor Clusii, and is now brought from the Canary Islands. When bruised, it gives a fine red Colour, and was the Cinnabar of Dioscorides and the ancient Grecians. Taken inwardly, it is a very good Astringent and Dryer. The late Helvetius melted it with powder'd Alum, and then made them into Pills for Diarrheas, Hæmorrhages, &c. But the Patient ought first to be prepared by Bleeding, &c. It is entirely soluble in Spirit of Wine. The Dutch counterfeit it with Gum Arabick and Alum, dissolved in Water, with Brasil Wood, to give it the true Colour; but this factitious kind ought not to be taken inwardly, though it is very proper for Painters.

26. Sarcocolla Offic.

The Plant that produces this Juice, is unknown. It is detergent, aftringent, confolidating, and an Ingredient in many drying Collyrium's, which are very fuccessfully used in small Ulcers of the Eyes, after those made with *Florentine* Orice and white Vitriol; and to make it into a Collyrium, nothing is required but to dissolve it in Plantane Water.

27. Scammonium, seu Scammoneum Offic. Scammony.

We have two forts of Scammony in the Shops, that of Aleppo, and that of Smyrna. The first is the best and most purgative, and is got from a Plant named Scammonea Syriaca, C. B. P. which is a Species of Convolvulus. It is a very strong Cathartick, but causes great Irritation, and even Instammations in weak Habits. It is given in Substance from two to twelve Grains; but ought never to be used when there is the least Suspicion of Instammations in any

Part

Part of the Abdomen. It is likewise a very ticklish Sometimes it has no Effect at uncertain Purge. all, fometimes it causes fatal Super-purgations; and which is most remarkable, it fometimes does not operate at all the first Day, but brings on an unsupportable Tenefmus and Hypercatharfis the next. It is very proper to dilute it with some oily viscid Substance, such as the Yolk of an Egg, or an Emulsion made with fweet Almonds and the cold Seeds. Prepared Scammony, or Diagridium, is a very proper Ingredient in the Pulvis Cornachini, which purges without any of the bad Effects of Scammony. Madame Grimaldi's Powder feems to be nothing but the Pulvis Cornachini difguifed. Scammony is the Basis of many purgative Compositions, fuch as the Diaphænicum, the Diaprunum, Confectio Hamech, &c.

28. Styrax Calamita Offic.

This is a refinous Juice of a reddish Colour, very agreeable Smell, like that of Benjamin, and of a pretty solid Consistence. It comes from the Styran folio Mali Cotonei, C. B. P. It is sometimes very soul, and therefore ought to be chosen shining and transparent. It is a very good Cordial, Antipestilential, and Strengthener; and when outwardly applied, it is discutient. The Tincture of Styran made with Spirit of Wine, added to that of Benjamin, makes a very good Lac Virginale, or Cosmetick Wash.

29. Tacamahaca Offic.

This is a refinous Substance, of which there are two kinds, one in Shells, and one in Lumps. The first is most esteemed, and is sometimes named Tacamabaca sublimis. It is of a very agreeable Smell, like that of Lavender and Angelica, and is brought

from Madagascar and New Spain, being the Product of a Tree named Tacamahaca populo similis frustu & colore Pæoniæ, J. B. Tecomahoica, Hernand. It is used externally in the same Intentions with the Gum Caragna, and likewise resolves Tumors, strengthens the Nerves, and cures the Head Ach, when applied in a Plaister to the Scalp.

30. Tragacanthum Offic.

This Gum flows from a Plant named Tragacantha Cretica flore albo, lineis purpureis notato, J. R. H. It is Emollient and Anodyne, and is therefore reckon'd very proper to abate the Acrimony of the Serum of the Bronchia and Intestines, in Coughs and Diarrhæa's. It is likewife Diuretick, and a good Corrector of many sharp Catharticks. A Lohoch may be made of it by first making it into a Mucilage of the Confistence of an ordinary Syrup, and then by mixing with this Mucilage Conferve of Marshmallows, or any other of the fame kind, with a few Drops of Oil of fweet Almonds. This Lohoch is fuffered to melt in the Mouth, in Difeases of the Thorax. The Mucilage of this Gum is likewife the Basis of the greatest Part of Pectoral Lozenges.





SECT. VII.

Fungi and other Excrescences.

1. Agaricus levis sive fæmina, & Agaricus mas. Agarick.

THE female Agarick is a Fungus, which grows on the Larch Tree. It is a porous, light Substance, cover'd with a yellow Bark, but within it is white; at first chewing, of a sweetish Taste, but afterwards bitter. Its Whiteness and Lightness distinguish it from the male kind. It is a flow Purger; but as it evacuates the serous Parts of the Fluids very effectually, it is very proper in an Asthma, &c. The Dose is from a Scruple to a Drachm, suspended in a Bag in purgative Decoctions; but it ought never to be given to weak Stomachs. The Male Agarick is not used in Physick, but is employed in Dying. It is of a yellowish Colour, and heavier than the former. When soften'd in a Lixivium of Salt Petre, and afterwards dried, it makes a good fort of Tinder.

2. Auricula Judæ, Fungus Sambucinus. Jews Ear.

This is a kind of Mushroom, which grows on Elder. Outwardly applied, it is a good Resolvent, being boil'd in Milk; and when boil'd in Vinegar, it makes a good Gargle for Swellings in the Throat, but is never used inwardly.

3. Tubera Cervina, Boleti Cervini.

These are a kind of Trustes or Mushrooms, of the Size of a Filbird, found in Germany on the Surface of the Earth. When fresh, they have an astringent Taste, but by drying they become more acrid. They are recommended in Hysterical Affections, and to increase the Milk of Nurses, being taken from a Scruple to a Drachm, but at present they are very little used.

4. Lycopodii Pulvis, Sulphur vegetabile.

This is a fine yellow Powder, iffuing from the Stalks found among the Mufcus Terrestris, or Lycopodium. It is gather'd in the Autumn, and when dried, easily takes Fire and fulminates. It is used in Germany for Epilepsies in Children, being given from ten to thirty Grains. It is likewise recommended in Dysenteries, intermitting Fevers, and in the Stone.

5. Bedeguar Offic.

This is a fpungy Excrescence of the Sweet Briar, produced by the Sting of Insects. In *Italy* they lay the Powder of this Spunge on Parts bit by venomous Creatures after Scarification.

6. Poco Sempie, Skinkia Offic. Agnus Scythicus seu Tartaricus, sive Borometz. Muscus Aureus.

Two very different Things have been called by the Name of Boromets; the first is a kind of Fur much esteem'd, found near the Caspian Sea, which is really the Skin of an Animal like a Sheep, as is observed by Kæmpser. The other is a kind of Filix Arborea or Fern, which grows near China and in Japan, resembling the four Feet and Navel of a little Lamb, and is cover'd with a fine Moss or Down. Hence arose the Fable of its being a Zoo-phyta;

phyta; which is accounted for and explained by Kempfer. Father Plumier, and feveral other Travellers have brought the Plants themselves into Europe. The Down that grows upon it, is celebrated for an Astringent, and especially in spitting of Blood, being held for some time in the Mouth; and it is certain that it has fome times succeeded.

7. Galla Orientalis Offic. Galls.

There are feveral forts of Galls; the first and best is termed the Aleppo Nut, or Galla Spinosa; the second is white; the third fmooth and round; the fourth of an irregular Figure; and the fifth has a kind of Crown. All these Galls are owing to Infects, which first prick the Oak Trees, and then lay their Eggs in the Wound. These Eggs swell with the Excrescence, and first turn to Worms, then to Flies; which having perforated the Galls, make their Escape. And as some Eggs are unfruitful, and remain in the Gall, they are observed to yield a volatile Salt.

Galls are very aftringent, and are by some given inwardly in Dysenteries. They have likewise been recommended in Intermitting Fevers; but the Foundation of their febrifugous Quality depends on too

few Inftances to be relied on.

8. Cardui Hæmorrhoidalis Capitula.

This is an Excrescence or Tumor of the Carduus Vinearum Repens Sonchi folio, C.B.P. They lie like Knots along the Stalk of the Plant, and are likewise owing to the Eggs and Juice of Insects. They are faid to be a Preservative against the Hæmorrhoids; but this is without Foundation.

9. Grana Kermes Offic. Coccus Infectorius, Grana Tinctoria. Kermes Berries.

These are Excrescencies of the Ilex Cocciplandifera, C. B. P. They are much used by Scarlet Dyers. They were first proved to be Excrescences by M. Fagon; but their Origin has been since more fully explained by Count Marsigli. They are gathered in Languedoc near Montpelier, and are generally so full of small Worms and other Insects, that they deserve to be reckon'd Animal rather than Vegetable Substances.

In Medicine, they are esteemed to be greatly cordial and sudorifick, being very full of volatil Salt. They are given in Powder, in the Quantity of twenty-four Grains, every six Hours, to prevent Abortion from any Strain or Hurt; for this Powder strengthens both Mother and Child, and ought to be continued for some Days. They are the Basis of the Syrup and Confection of Alkermes.

10. Coccinella Offic. Coccus Indicus Tinctorius. Cochineal.

This is altogether an Animal Substance, being a kind of Bug with fix Legs, which sticks on the Opuntia major, or prickly Pear, and several other Plants, from whence the Indians remove them to the Opuntia; and when they are come to their sull Growth, they kill them with cold Water, and afterwards dry them. Cochineal is used in all the same Intentions with Kermes; and besides the common Scarlet is the Basis of that beautiful Colour called Carmine, which is used by Painters.



PART IV. The Animal Kingdom.

1. Cantharides Offic. Musca Hispanica.



HESE Flies are very common in Spain, and in some other Places. They The act not only on the Membranes of the Bladder, but likewise sometimes on the Stomach; and the Patient often

vomits them up, before he feels any Heat of Urine, which afterwards becomes almost intolerable. A famous Instance of which was in a young Man, to whom they had been given inwardly on a Love account. They are the Basis of Vesicatories, and when thus applied, they attenuate and divide the Blood. These Vesicatories raise Blisters on the Skin, full of Serum, which being burst, the Suppuration is kept up by Pear-tree Leaves, or Plaisters which contain fome suppurating Ingredients. They are used in Defluxions of the Eyes, Teeth, &c. in Lethargies, and in all Obstructions which proceed from a thick viscid State of the Serum. They are applied to the Shoulders, Thighs, and feveral other Parts of the Body. By mixing with the Blood and Urine, the Parts of these Flies often cause Suppression and Heat of Urine, as is well known; and therefore when Veficatories are applied in Apoplexies, Deli-Bb 2 riums

riums or Lethargies, it ought carefully to be obferved whether the Patient makes Water freely, though he is not perhaps in a Condition to express his Pain; and if he does not, he ought to drink Emollient Ptisanes or Emulsions; or Milk, or Oil of fweet Almonds ought to be injected into the Bladder through the Urethra. Groenveldt a Dutch Physician, who pactifed in London, wrote a Book De tuto Cantharidum usu interno; in which he pretends that by adding Camphire as a Corrector, and making the Patient drink Emulfions plentifully, the bad Effects already mentioned might be prevented. His Project failed at that Time, and he had full Time to repent his Rashness in a loathsome Prison. But the internal Use of the Tincture of Cantharides has fince been very common in England. In that Country likewise Vesicatories of Cantharides are frequently applied in Fevers with very great Success.

2. Scincus Marinus Offic. Skinck.

This is a kind of small Crocodile or Lizard found on the Banks of the Nile, and in other Parts of Africa and Asia. It is an Ingredient in the Mithridate and Diasatyrion, because the Flesh of this Animal is supposed to excite Transpiration, Sweat, and Lust.

3. Vipera Offic. The Viper.

The yellow poisonous Liquor of the Viper runs into the Wound made by that Animal through the poisonous Phangs, in which there is both an Hole and a Slit near the Point. The Symptoms that attend this Bite, are very well described by many Authors; but the Cure consists in making immediately a strong Ligature on the Part; then scarifying and burning it with a hot Iron; or making a larger Incision, to be filled with Gunpowder, which is presently to be set on Fire. This is the Method practised with Success by Hunters, who

happen to be bit by mad Dogs. The Flesh of the Viper either in Substance or in Broths is thought to purify the Mass of Blood. The best way to make these Broths, is to cut the Viper into small Pieces, and with these to stuff the Body of a Chicken, which is afterwards boiled as usual. The Powder of Vipers is given from ten to thirty Grains, either in a Bolus or some proper Liquor. The Dose of the Volatile Salt is from six to ten Grains in a Bolus. The Oleum Viperinum is recommended to discuss Tumors and Rheumatisms.

4. Castoreum Offic. Castor.

The best Castor is that of Dantzick; that of Dauphiné is likewise very good; but what comes from Canada is worth nothing. The Beaver, of which this Medicine is the Inguinal Glands, is sound along the Rhone, the Rhine, and in Poland, Russia and Canada. It is reckon'd a powerful Antihysterick, and particularly adapted to cure hysterical Convulsions of the Abdomen, even when held to the Nostrils, or applied to the Navel. Some think the internal Use of it dangerous; but it is freely given by others. It likewise calms the Irritations and convulsive Motions of the Nerves; resists any malignant Disposition in the Fluids, and enlivens the Blood. The Dose is from three to ten Grains.

5. Moschus Offic. Musk.

The Animal which produces Musk, is a kind of Wild Fox, which is said to have Bags under his Belly, in which the Musk is form'd. The Musk of Tonquin is the most valuable; but it is likewise found in the Northern Part of the Mogul's Country, in Tartary and in Bengal, from whence we have it. The Arabians used Musk as a great Cordial; but at present it is left out in almost all the Compositions in Bb 3 which

which they directed it, as being prejudicial to Perfons of both Sexes subject to Vapours; and as it likewise heats very much, it is very little used in Physick. Cotton impregnated with Musk is very good in that kind of Deafness, which is owing to too great Thickness and Viscidity of the Fluids.

6. Zibethum sive Catus Moschatus. Civet.

The Animal which yields Civet, is a kind of wild Cat, called by the Ancients Hyana. There are two kinds of it; one that comes from Holland, and another that comes from Guinea, which is browner than the former. When Civet is mixed with Musk and Ambergrease, or lowered by a Mixture of any other Powders, it has a very fine Smell; but alone, the Smell is disagreeable. It is very little used in Physick. Some rub Childrens Navels with it, to cure their Cholicks, and it was formerly applied to the Pudenda of Women in Hysterick Fits; but this last Practice is not only useless, but hurtful.

7. Vesiculæ Moschatæ Orientales.

These Bags are got from a kind of Musk Rats in the East Indies, and they are said to be situated as those of the Civet Cat.

8. Sanguis Hirci Alpini, seu Rupi Capræ.

We have three different Substances, that are generally termed Sanguis Hirci, or Goats Blood. The first is that mentioned in the Title. The second comes from the Iben of Gesner and Aldrovand; and the third is Kids Blood, Sanguis Hædi. That which is brought from Switzerland, is a powerful Sudorifick, and is recommended in Pleurisies; but it ought never to be given till the Vessels have been well emptied. Helmont talks of very great Miracles to be performed with this Medicine.

9. Priapus Balænæ vel Ceti.

This is a kind of hard Cartilage, which is found in the Penis of Whales. It is recommended by Authors as a good Sudorifick, Diuretick, and an Exciter to Venery; but it is very groundlessy said to be Lithontriptick.

10. Cornu Cervi Offic. Harts Horn.

This is a moderate Cordial and Astringent; its volatile Salts being mixed and qualified by a mucilaginous Substance, made into a Gelly with Water, it is very proper in Diarrhæas. In Substance from twenty Grains to a Drachm, it is gently sudorifick, and may fafely be given in malignant Fevers, the Small-pox, Measles, &c. The Tips of the Horns, penetrated by the Steam of boiling Water, turn into a foft Substance, which when the Skin is taken off, is white, and then goes by the Name of Corme Cervi philosophice præparatum. For this Preparation nothing is required but to fuspend the Horn at the Top of a Cucurbite, in which Plants are distilled. It is a good Absorbent, with some Share of active and volatile Principles. Shaved Harts Horn is put into Ptisanes, as an Astringent.

11. Ebur Offic. Ivory.

The Qualities and Ways of using Ivory, are the fame with those of Harts Horn. Ivory is likewise calcined as a good Antidysenterick. This goes by the Name of Spodium Eboris, and Ebur Ustum.

13. Dens Apri. Boars Tooth.

This is reckon'd a good Sudorifick, being pow-"der'd and taken from one to two Drachms.

13. Mandibulæ Lucii Piscis. The Jaw Bones of a Pike.

These are absorbent, and pass with some for a good Sudorisick, being taken in the Quantity of a Drachm in Carduus Water. They are by others recommended in Pleurisies.

14. Cornu Rhinocerotis. Unicorn's Horn.

There are four kinds of Land Animals called by the Name of Monoceros, Rhinoceros, or Unicorn. The first is called by Gesner, Orix Bisulca, sive Strepsiceros, id est, Lupus Marinus. The second, Asinus Indicus Monoceros. The third is the Unicorn, painted like a Horse, with a Horn in his Forehead, said by fabulous Authors to be found in the remote Parts of Æthiopia. The fourth is the true Rhinoceros, found in Africa and in the Island of Fava, described by Bontius. The Horn, or rather Tusk of this Animal is turned up toward his Nofe, and in a young Animal is about a Foot and an half long. This Horn is fudorifick, in the fame manner as other Horns, but it has not all the other Qualities attributed to it, both formerly and at present, by the Indians, who make Cups of it for their King, imagining that nothing drank out of fuch Cups, can be poisonous. Some Authors recommend it in Epilepsies of Children. Another kind of Unicorn's Horn belongs to a kind of Whale found in Davis's Straits, and on the Coasts of Greenland and Iceland, in the Icy Sea. This is a white contorted Horn from feven to fixteen Foot in Length; but Authors are not agreed about the Manner where it is plac'd in the Animal. It is esteemed a powerful Cordial, and proper in Hæmorrhages, Diarrhæas, &c. in the Quantity of twenty-four Grains. Others order Pieces of it to be worn about the Neck.

15. Os è Corde Cervi,

This is a Cartilage found at the Basis of the Heart of the Stag, which offises in their old Age, and is look'd upon by some as a Cordial; but in Shops, to which it is order'd, the Bone in the Heart of Oxen is often substituted for it, as being of equal Virtues. This Bone is an Ingredient in many Compositions.

16. Os Sepiæ. The Bones of the Scuttle-fish.

This Fish is a kind of *Polypus*. It has a Bag in its Neck, containing a black Liquor, like Ink, which it emits to trouble the Water, when pursued by other Fishes. The Bone recommended in Physick as a good Diuretick, is found about its Middle; others make a Powder of it for cleaning the Teeth.

17. Bezoar Orientale & Occidentale Offic.

Oriental Bezoar is a Stone of different Colours. but most commonly brown or Olive-colour'd, difposed in different Strata. When thrown into the Fire, it gives a volatile vinous Smell, like all other Animal Substances. It comes from the Kingdom of Boulan, and from other Places of the East-Indies and Persia, mentioned by Kampfer. It is formed in the Stomach of a kind of wild Goat, called Cervi-Capra, or Capri-Cerva. In the Heart of this Stone. fome heterogeneous Substance is always to be found. which makes the Nucleus or Basis of it; and round this a flimy Matter gradually hardens in different Layers, as in the human Calculus. It is moderately cordial, containing a volatile Sulphur and Salt in a pretty large Quantity; and there is no Danger in the Use of it, of heating the Patient too much. It is given from ten to twenty Grains in Fevers, &c. and likewise in Epilepsies of Children, after having emptied the Veffels. Occidental.

Occidental Bezoar is likewise found in the Stomach of an Animal named Capricerva Occidentalis, a kind of Goat of Peru and Mexico. It is commonly white within, and yellowish on the Outside; but is less esteemed than the former. Wee see often fossile Bezoars, which are brought from the West-Indies, in room of the true Animal kind, but which have no Medicinal Virtues. They are easily known, both by not being disposed in Strata, and by not emitting an urinous burnt Smell in the Fire.

18. Lapis Bezoar factitius, sive Lapis de Goa. Goa Stone.

This is a Composition of the five precious Fragements, Coral and Leaf Gold, mixed up with Gum Tragacanth. It is commonly of a blackish Colour, and is made by the Jesuites in Goa. It is much used by the Europeans who live in the East-Indies, in the same manner as Bezoar, and is particularly recommended as a Sudorifick in Rheumatisms.

19. Ægagropila Offic. Pilæ Damarum. German Bezoar.

This is a little Ball found in the Stornach of Does and Goats in Germany, which fome have pretended to be form'd by the Doronicum or Leopard's Bane, on which these Animals seed; but it is now certain that it consists only of Hairs, which they swallow; and the like Balls are found in the Stomachs of Cows, Hogs, Boars, &c. and consequently are of no medicinal Virtue; tho' from the salse Opinion concerning their Original, some have celebrated them in Loosenesses, Hæmorrhages, &c. because of the Plants from whence they conceived them to be formed. They have likewise been recommended in a Vertigo, because the Goats which produce them

climb very steep Rocks without being giddy. Vid. Velschium de Ægagropilis.

20. Hippolithos.

This Stone is found in the Bladder of Horses, and may be used as Bezoar, because it contains a volatile Salt, and provokes Sweat.

21. Calculus Cyftidis Felleæ. Gall Stones.

These Stones burn quite away in the Fire, being only concreted Bile; and the Gall of Animals brought to a due Confistence by the common Methods, will answer all the Intentions in which they have been celebrated, and especially the Pedra del Porco, which is nothing more than the Gall Stone of an East-India Porcupine.

22. Margaritæ & Uniones Offic. Pearls.

These are a kind of Bezoar bred in Oysters, and accordingly they confift of feveral Strata, and are really stony Concretions. The best Oriental Pearls are found in the Island of Ormus in the Perfian Gulf. They are likewise gathered in the Gulf of Mexico, in the Province of Costa Rica, and in several other Places of America; but these Occidental Pearls are less esteemed than the former. Small Pearls, commonly called Seed Pearls, are likewife found on the Coasts of Scotland. Sometimes they are found from two to seven in one Oyster; which shews how unjustly they are termed Uniones, as if there were only one in each Shell. Valentini, on the Credit of one Kregger, pretends they are the Eggs of these Animals, but this deserves Confirmation. When thrown into the Fire, they give an , urinous Smell in a fmall degree. They may fometimes be whitened by taking off the outer Stratum, when yellowish, but this diminishes their Size. Pearls are a very good Absorbent, being levigated on

on the Porphyry like Crabs Eyes; but they have likewise other Qualities, since they yield a volatile Salt by the Retort, being on that account Cordial and Depuratory.

23. Mater Perlarum Offic. Mother of Pearl.

This is not the Shell in which the Pearl is found, as is commonly faid, but a Shell of another kind, called *Concha Margaritifera*, tho' it produces no Pearls. It is found in the *Mediterranean*. This is Absorbent and Cordial, in the same Degree with Pearls; but then only the purest and most shining Parts of the Shells must be used, being first well levigated on the Porphyry; and these by the Retort yield a volatile Salt.

24. Oculi sive Lapides Cancrorum Ossic. Crabs Eyes.

These are Stones found in the Stomach of Crabs, Crayfish, Lobsters, &c. and are found in great Plenty on the Coasts of the Baltick. They are not found in the Bodies of these Animals, except at certain times of the Year; for in the Months of June, July, and August, in which they cast their Shells, no Stones are to be found in them. The Stones are form'd in two Bags, one on each Side of the Stomach. These Animals cast their Shells about the Month of July; and what is furprizing, this Change reaches not only to the Shells by which they are covered, but also to the Membranes of their Stomach; for if after the outward crusty Shell is changed, we examine their Infides, we find the old Stomach confumed and digested by a new one; which being compleatly formed, a milky Juice fills the Bags above-mentioned, out of which the Stones, falfely called Crabs Eyes, are formed, which in the next Change ferve to nourish the Animal. This Change of their internal Parts was first observed by

by Van Helmont, and afterwards by Sachi, Wepfer, and others; but the best Account we have of this whole Affair, is that of M. de Reaumur, in the Me-

meirs of the Academy, 1712, 1718.

Crabs Eyes are absorbent, and likewise contain a finall Quantity of a volatile Principle. They are prepared by Levigation on the Porphyry; but in forme Constitutions, tho' reduced to the most impalpable Powder, they cause an Erysipelas and other Diforders, especially to Women, of which M. Geoffroy has feen feveral Instances. They are likewife in a fmall Degree Diuretick.

25. Chelæ Cancrorum Offic. Crabs Claws.

These are used much in the same manner with Crabs Eyes; but they contain an Ammoniacal Salt, which the other has not. They are an Ingredient in the Countess of Kent's Powder.

> 26. Lapis Manali. The Stone of the Sea Cow.

This is the Os Petrofum of that Animal, which fome recommend to be worn about the Neck, as a Preservative against Hæmorrhages.

27. Dentali seu Dentalium Offic.

This is a fmall Shell or oblong Conical Tube of a white Colour, which incloses a Sea Worm. It is found on the Coasts of England, and is Alcaline, Absorbent, Cordial and Astringent. There is another kind of Dentali found on the Coast of Normandy, which is no more than a finall Heap of Sand, in which a Worm hides it felf.

28. Eutali, Eutalium Offic.

These are Tubes or Shells almost like the former. but longer and cylindrical, and ferve likewise to contain a kind of Sea Worm, having the fame Virwes with the Dentali.

29. Tu-

29. Tubuli Marini, in quibus Vermiculi delitescunt.

These are the pretended Skins of Serpents brought from Malta, but are in reality nothing but Shells or Tubes in which Worms are lodged.

30. Umbilicus Marinus Belliricus, seu Belliculus Marinus.

This is the Cone of a Shell, in some measure representing a Navel, and which the Animal opens and shuts at pleasure. It has the same Virtues with Crabs Eyes, and is besides hung by the good Women about their Childrens Necks, to preserve them from the Cholick.

31. Unguis Odoratus, seu Blatta ByzantinaOffic. Onix Dioscorid.

This is not a Nail, but a Substance like Horn, with which a Fish shuts its Shell at certain Times. This Fish is described by Rompbius, under the Name of Purpura Murex. It is named Unguis Odoratus, from its Figure and agreeable Smell; which Smell is not however natural to the Shell, but acquired by its being imported with the Schananthe. The Antients reckon'd it a powerful Cordial, and such it certainly is in some degree. When burnt, the Smell of it is good in the Vapours.

32. Lapis Colubrinus, Pedra de Cobra de Cabelos Lusitanor.

This is an oval black Stone with greyish Specks, and which being porous, sticks to the Tongue. But probably it is a Composition, the Basis of which is calcined Bones; and notwithstanding all that Authors have said about it, it is to be reckon'd no more than a simple Absorbent.

33 Fol-

33. Folliculi Bombycini. The Cod or Bags of Silkworms.

Both the white and red Bags may be used indifferently, as being equally stored with volatile Salt. They are the Basis of Goddard's Drops, and Ingredients in several other Cordial Compositions, such as the Confectio de Hyacintho, when made in the best Manner.

34. Folliculi Aranearum. The Cod or Bags of Spiders.

M. Bon, Prefident and Member of the Royal Academy of Montpelier, caused Gloves and Stockings to be made of these Cods, and likewise a fort of Drops, in imitation of those of Goddard, because they contain a great Quantity of Volatile Salt.

35. Ichthyocolla Offic. Isinglass.

This is drawn from the Intrails, Fins and Tail of a large Fish, called according to some by the same Name, and Huso according to others, found in the Volga, Danube, and fome other great Rivers. It is an Ingredient in some Agglutinant Plaitters, and is likewise reckon'd emollient and resolvent. Wine-Merchants use it in fining their Wines; for which purpose they beat up a sufficient Quantity of it with Wine, and afterwards throw this Mixture into the Cask, where it first forms a Skin or fine Network on the Surface, and then precipitates to the Bottom, carrying along with it all the groffer Parts of the Liquor; fo that the Filtre may in this Cafe be faid to pass through the Liquor, and not the Liquor through the Filtre. This is a very harmeless way of purifying Wine, which is more than can be faid of the other Methods.

36. Gluten Taminum. Glue.

Glue is made of the Shreds of Ox Skins, cut in small pieces, and boil'd to a Gelly, being sometimes mixed with the Cartilages and Tendons of the same Animals, and afterwards evaporated and dried. Beef may be managed in the same manner, to make Portable Soupe, requiring nothing afterwards but to be diluted with a due Quantity of boiling Water. This Soupe may be sent by the Post, and is very convenient at Sea; and in the time of the Plague at Marseilles many Persons lived upon it.

37. Nidi Alcyonum seu Hirundinum. Nests of Indian Swallows.

They are found on the Rocks on the Coasts of China and Japan. They are of a Substance much like Gum Tragacanth, and when mixed in Broth or warm Milk, they swell and make a thick Soupe, much esteemed in these Countries, as a Restorative, especially in Diseases of the Lungs. They are also reckoned delicious Food for Persons in persect Health.

38. Cera flava & alba Offic. Wax.

This is a refinous Dust which Bees pluck from Flowers. The white Wax is only the yellow well wash'd and exposed to the Air. But there is besides a natural kind of white Wax, made by a kind of Flies in China, which is very rare. There is another kind of Flies in Guadaloupe, which yield a black Wax, but they have not hitherto found the Secret of whitening it. Yellow Wax is most proper for Medical Uses, being a very good Resolvent, and proper in Diseases of the Skin. It likewise serves to give Consistence to Plaisters and Cerates.

Honey

Honey has excellent Qualities, being a natural Soap, very advantageous in Diseases of the Thorax.

39. Gummi Lacca Offic:

This is a kind of Gum Resin gathered by Ants in the East-Indies from Flowers, which they afterwards carry to the Branches of Trees to make their Nefts, in which they probably lay their Eggs; because these Nests are disposed in Cells, in some of which a fmall Grain is found, which is red when bruifed, being the Worm out of which these wing'd Ants are afterwards form'd; and it is on account of thefe Grains that we rank this Gum Refin among the Animal Substances. It is brought to us in Grains formed by straining it through a Linnen Cloth, after having dissolved it in warm Water; in Cakes made by melting the Grains into one Mass; and in Sticks, which is the Gum fluck round the Branches of Trees by the Ants. Lacca is the Basis of Sealng Wax, which is made in the East-Indies, by mixing it with Vermillion; but in Europe, by mixing Cinnabar, Colophony and Benjamin, in melted Lacca. Lacca is brought chiefly from the Molucca Mands, and also from Madagascar:

40. Mumia vera Offic. Mummy.

There are two kinds of Mummy; the first of which has its Original from human Carcasses dried by the Sun and Sands in the Deserts of Africa; such as those of Zara; Lybia, &c. where the Winds sometimes bury whole Caravans in the Sands. These Bodies by drying become of the Consistence of Horn, and very light. These are called white Mummies, but are not used in Physick. The second fort are the Embalmed Bodies sound in Egypt; which are very rare, and seldom to be met with among the Druggies; in place of which they sell

us Parts of Bodies embalmed with Myrrh, Aloes, Incense, &c. by the Jews. This Mummy is reckon'd a good Resolvent of coagulated Blood after Falls or Blows, and a good Antiseptick; acting not only by its Bituminous and Balsamick Parts, but also by the volatile Salts of the Carcass from which it is made. By dissolving it in Spirit of Wine, we easily obtain a Tincture which contains its Balsamick Qualities.

41. Ungula Alcis. Elks Hoof.

This contains a volatile Salt, like that of the other Parts of Animals, and in this respect may be useful in the Epilepsy, but not on account of the Fable related by Authors, that the Elk is a Russian Animal, very subject to Convulsions, and cures it self by scratching its Ear with its left Foot; the Hoof of which Foot was upon that account preferred to the right, and recommended to be taken inwardly in Powder, or worn about the Neck in Epilepsies.

42. Sperma Ceti Offic.

The Nature and Origin of this Substance has been long disputed; but we are now fatisfied that it is a fatty Animal Substance, found in the Brain and circumjacent Parts, especially in the Diploe of the Cranium, of a Whale named Orca or Ryaris. It likewife fometimes fwims on the Surface of the Sea, near the Shores on which thefe Whales have struck, and where their Carcasses have putrissed. According to the English Accounts, Sperma Ceti is prepared by boiling the Brains of the Whales in a strong Lixivium, till all the Humidity being evaporated, a white folid Matter, like Soap, remains. This being cooled, they take off the Oil which fettles at Top, and having melted the folid Mass a second time, and fuffer'd it to cool, they divide it with

with Knives into Lamina, in which Form it is imported. It is likewise made at St. John de Luz, at Amsterdam, and elsewhere. Sperma Ceti is an excellent Emollient and Pectoral, especially when melted over the Fire with Oil of sweet Almonds. The other Ways of using it, both inwardly and outwardly, are too commonly known to need being mentioned.

FINIS



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INDEX.

A

A Cacia vera, 334. Acajou Nux, 321. Acajouanum lignum, 309.

Acid Salt, its Nature, 12. Acid Salts, of three kinds, 23.

Acori radix, 284.

Ægagropila, 378. Æs ustum, 270.

Æthiops Mineral, 227.

Agallochum, 309.

Agaricus, 367.

Agate, 78.

Agrimony, its Chemical Analysis, 35.

Alcanna, 316.

Alkali, whence derived, 13. Alkalies, why they diffolve Sulphurs, 17.

Aloes, 335.

Alum, the feveral Kinds of it, 114. The Ways of making it, 115. Its Nature, 117. The Chemical Analysis of it, ibid. Its Virtues, 145. The feveral Preparations of it, 120.

Amber, 142. whence gathered, 143. which to be preferred, 144. its Virtues, 118. the feveral Preparations of it, 146.

Ambergrease, 138. its Uses, 140.

Amethyst, 84.

Amomum racemofum, 322.

Amylum, 344.

Anacardium, 321.

Anchusa Orientalis, 285.

Animal Substances, the Principles to be obtained from them, 29.

Anifum

Anisum Sinense, 322.

Antimony, the several Kinds of it described, 189. its Virtues, 191. the Preparations of it, 192. Glass of Antimony, 195. Regulus of Antimony, 196. Golden Sulphur of Antimony, ibid. Lixivium of Antimony, 201. the Martial Regulus of Antimony, ibid. Butter of Antimony, 202. Cinnabar of Antimony, ibid. the universal Antimonial Panacea, 203. Bezoar Mineral, ibid. Diaphoretick Antimony, 204. Tinctures of Antimony, ibid. of the Effects produced by Antimonial Preparations, 206. Antimony made use of by several Artificers, 209.

Aqua Fortis, 104.
Aqua Regia, 105.
Aracus Aromaticus, 323.
Arcanum Duplicatum, 104.
Areca, 323.
Armenian Bole, 61.
Arfenick, how prepared, 166. its Nature, 168.
Arfenical Juices, 159.
Arundo Saccharifera, 310.
Afa Fætida, 353. Dulcis, 354.
Afpalathum, 310.
Auricula Judæ, 367.

B

Baccæ Bermudenses, 323.
Balfamum Peruvianum, 349.
Balfamum Copaiba, 348.
Balfamum Ipecuebæ, 352.
Balfamum Judaicum, 346.
Balfam of Sulphur, 155.
Balfamum Tolutanum, 349.
Barks used in Physick, 300.
Bathing warm when when

Bathing, warm, when useful or prejudicial, 45. Cold Bathing, a powerful Remedy in some Cases, ibid. to whom differviceable, 46. artificial Warm Baths, 52.

Bdellium, 354.
Becuiba Nux, 324.
Bedeguar, 368.
Behen, 286.
Ben five Glans Uno

Ben sive Glans Unguentaria, 323.

Benzoinum, 354. Bezoar Mineral, 203.

Bozoar Orientale & Occidentale, 377.

Bilmuth, 209. where found, 210. the Preparations of it-

Cc 3

Biftort

Biffort Roots, the Analysis of them, 36.
Bitumens, how produc'd, 17.
Bituminous Juices, 133.
Bitumen Judaicum, 137.
Blatta Byzantina, 382.

Bodies, their Principles in general, 5. in particular, 9. their Diversity arises from the different Combination of their Principles, 20.

Bolus, its Nature and Use, 61.

Borax, 128. different from the Chrysocolla of the Antients, 130. its Use, 131.

Brafilianum Lignum, 310.
Brafs, how made, 181.
Burdock Leaves, their Chemical Analysis, 34.
Butua, 286.

C

Cadmia, 179. Cadmia fornacea, 182.
Calamus Aromaticus verus, 310.
Calculus Ciftidis felleæ, 379.
Campechianum lignum, 210. Campechianum lignum, 310. Camphora, 355. Cantharides, 371. Caranna, 356. Cardamomum, 325. Cardui Hæmorrhoidalis capitula, 369. Carpobalfamum, 325. Carthamus, 316. Carthamus, 316. Caryophylli Aromatici, 326.
Cafcarilla, 307.
Caffada, 345. Cassia Caryophyllata, 300. Cassa Fistula, 326. Cassa Lignea, 300. Cassine vera Floridanorum, 317. Cedrinum lignum, 310.
Cera flava & alba, 384. Ceruss, 246. Chalcitis, 187. Chalk, 63. Chemical Mixtures, their Effects, 30. feq. Chrysocolla, 128.

Chrysolithos, 82.

Cinnamomum, 301.

Cinnabar of Antimony, 202. native, 214. the feveral Kinds of it, 215. its Uses, itid. factitious Cinnabar, 216. how made, 227.

Citrinum lignum, 311.

Clay, its Nature, 55. the Clays used in Physick, 56.

Cobalt, 166.

Coccinella, 370.

Cocci Orientales, 327. Coccus Tinctorius, 370.

Coffee, 324.

Colcothar, 112. Colocynthis, 327.

Colubrinum lignum, 311.

Contrayerva, 287.

Copal, 357.

Copper, described, 266. its Nature, 267. its bad Qualities, 268. Remedies against them, 269. Recrements of Copper, ibid. Preparations of Copper, 271. Ens Veneris, ibid. Tinctura Cærulea, ibid.

Cornu Cervi, 375.

Cornu Rhinocerotis, 376.

Cortex Ligni Guaiaci, 302. Cortex Peruvianus, 303. Spurius, 306.

Cortex Tamarisci, 308.

Cortex Winteranus, 302.

Costus, 288.

Coftus, 288.
Coftus Caryophyllatus, 308.

Crocus, 317.
Crocus Metallorum, 193.
Cryftal, 77.

Curcuma, 288.

Cyperus, 289.

- T Dens Apri, 375. Dentali, seu Dentalium, 381. Diamond, 83. Dictamnus Creticus, 316.

Earth, a Principle in Bodies, 8. elementary Earth the fame with the Caput Mortuum of the Chemists, 11. its Nature, ibid. Earths, CCA

Earths, are either Sands, or Clays, 55.
Earth-worms, their Chemical Analysis, 37.
Ebenus, 311.
Ebur, 375.
Elemi, 357.
Emerald, 80.
Emeticks, the Cautions requisite in giving them, 206 feq.
Emetick Tartar, 194.
Euphorbium, 357.
Eutalium, 381.

F

Fat, how formed, 19.
Fire, the active Principle in Bodies, 8, 9.
Flos Æris Officin. 270.
Foctidum Lignum, 312.
Folliculi Aranearum, 383.
Folliculi Bombycini, ibid.
Folliculi Sennæ, 328.
Foffil Coal, 148.
Fungus Sambucinus, 367.

Galanga, 290.
Galbanum, 358.
Galla Orientalis, 369.
German Seal'd Earths, 59.
Gluten, 384.
Glycyrrhizæ Succus, 335.

Glycyrrhizæ Succus, 335.
Gold, where found, 278. how separated from other Metals, 279. its Nature and Virtues, 280. first brought into Medicinal Use by the Arabians, ibid. Aurum Potabile, 281. Aurum sulminans, 282.
Grana Kermes, 370.

Grana Kermes, 370.
Guaiacum Lignum, 312.
Gums, how formed, 24.
Gummi Ammoniacum, 358.
Gummi Arabicum, 358.
Gummi Guaiaci, 359.
Gummi Hederæ, ibid.
Gummi Lacca, 385.
Gummi Nostras, 359.
Gutta Gambe, 359.

H

Health, the Means of preserving it, 1.
Heliotropium, 343.
Helmont, Van, his Experiment on the Willow, 8.
Hermodactylus, 290.
Hernia's, how cured, 91.
Hippolithos, 379.
Homberg, M. his sedative Salt, 113.
Honey, wherein it consists, 24.
Hyacinth, 79.
Hypocistis, 335.

1

Jalappa, 290. Ichthyocolla, 383. Jet, 147.

Indigo, 343.
Inflammable Substances in Animals and Vegetables, wherein they consist, 18.

Ipecacuanha, 291.

Iron, its Description, 253. whence procured, *ibid*. its Nature, 254. its Medicinal Virtues not unknown to the Antients, 256. preferable to Steel, 257. Forms of giving it, *ibid*. Preparations of Iron, 258. Crocus Martis aperiens, *ibid*. Salt of Iron, 259. Tinctura Martis aperiens, 260. Tartarum Chalybeatum folubile, *ibid*. Flowers of Iron, *ibid*. Crocus Martis astringens, 261. Tinctura Antiphthisica, *ibid*. of the Virtues of Iron, 262. all the good and bad Effects of Iron are owing to its Stypticity, 265.

Iris Florentinus, 293.

Juices, which naturally flow from Vegetables, of three kinds, 346.

Juncus odoratus, 318.

K

Kermes Grana, 370. Kermes Mineral, 198.

L

Labdanum, 360.
Lapis Ætites, 68.
Armenius, 76
Belemnites, 3.
Bezog fact. jus, 378.

Lapis Bezoardicus Fossilis, 69. Cadmia, 179. Calaminaris, 180. Ceratites, 73. Colubrinus, 382. Gloffopetra, 72. Hæmatites, 171. Heraclius, 176. Judaicus, 71. Lazuli, 74. Manali, 381. Petracorius, 179. Prunellæ, 102. Sardus, 78.

Lavacrum Minerale Solis, 105.

Lead, described, 239. where found, and how extracted from the Ore, 240. its Nature, 241. Preparations of Lead, 243. Minium, how formed, ibid. Litharge, 244. Burn'd Lead, 245. Ceruss, 246. Acetum Saturni, ibid. Salt or Sugar of Lead, 247. Balfam of Lead, ibid. Burning Spirit and Oil of Lead, 248. Poterius's Mineral Mummy of Lead, ibid.

Lemman Earth, 56. its Virtues and Chemical Analysis, 57. the Inconveniencies arising from too long Use of it, 58

Lignum Literatum, 312. Lilium Paracelfi, 203. Lime, how made, 65. its Uses in Physick, 66. Liquid Amber, 349. Litharge, 244-Liver of Antimony, 193.

Loadstone, 176. Lycopodii Pulvis, 368.

M

Magnefia, 178. Mallow, the Analysis of it, 36. Malta-Earth, 59. Mandibulæ Lucii Piscis, 376. Manna, 360. Margaritæ, 379. Marle, the Kinds of it used in Physick, 60. Mastiche, 361. Mater Perlarum, 380. Mechoacanna nigra, 290. Officinal. 293.

Medicines, what is meant by the Nate, 1. are simple q: compound, 2. their Division, ibid. 7. their Virtues how wover'd,

discover'd, 26. feq. Rules concerning the Manner of discovering them, 38.

Melanteria, 188. Mercurius Vitæ, 102.

Metals, are bituminous Substances, which have undergone a long Digestion, 18. described, 239.

Metallick Fossils, 171, 189.

Mineral Waters, are cold or hot, 47. their Virtues on what depending, 48. the faponaceous Spring of *Plombiere*, *ibid*. of Waters impregnated with Salts, 49. artificial faline Waters, of the fame Virtues with the natural ones, 51. of fulphureous Waters, 52. of Waters impregnated with Metallick Particles, 53.

Minium, 243. Mify, 187.

Mixed Bodies, their Effects, when thrown into the Bodies of Men and Animals, 33.

Moschus Officinal. 373.

Mumia vera, 385. Myrobalani, 328.

Myrrha Troglodytica, 361.

N

Naphtha, 133. Nardus, 294: Nephriticum Lignum, 312. Nidi Halcyonum, 384. Nifi, 294.

Nitre, not the Natrum of the Antients, 94. whence obtained, 95. how made, 97. its Virtues, 98. the Preparations of it, 102.

Nux Moschata, 329.

Nux Vomica, 329. legitima, 330.

0

Oculi Cancrorum, 380.
Oil, its Nature, 16.
Oleum Cacao, 352.
Oleum Palmeum, 353.
Olibanum, 362.
Onyx, 78.
Opal, 83.

Opium, 336. the Affects of it, 337. Rules to be observed in taking it, 3.8.

Opobal-

Opobalfamum, 346. Opoponax, 363. Orpiment, 160. Os e Corde Cervi, 377. Os Sepiæ, ibid.

P

Palimpissa, 352. Panacea duplicata, 104. Pareira Brava, 286. Peruvian Bark, 303. its Virtue discover'd by Chance, 41, 303. Rules to be observed in giving it, 306. Petroleum, 133. its Nature and Use, 134, 135. Philosopher's Stone, 282. Piffa, 352. Piffasphaltum, 135. Pisselæum, 352. Piper Indicum, 330. longum, 331. Jamaicenfe, ibid. Æthiopicum, ibid. Pix Burgundica, 352. nigra, ibid. Plants, Principles to be obtain'd from them, 28. Poco Sempie, 368. Pompholyx, 185. Priapus Balænæ, 375. Prince's Metal, how made, 213. Pulvis fulminans, 105. Pyrethrum, 295.

0

Quickfilver, its Description, 216. where found, ibid. how extracted from Glebes of Cinnabar, 217. its Nature, ibid. 218. may be reduced to a Calx, 219. by the Antients reckon'd a Poison, ibid. the ill Effects of an injudicious Use of it, 220. its Virtues, 221, 223. it ought to be purified, before inwardly used, 222. Preparations of Quickfilver, 224. Red Precipitate, 225. White Precipitate, ibid. Yellow Precipitate, ibid. Green Precipitate, 226. Black Precipitate, ibid. Æthiops Mineral, 227. Factitious Cinnabar, ibid. Corrosive Sublimate, 228. Calomel, ibid. Mercurial Panacea, 229. Forms of giving Mercurial Preparations, 230. the only Specifick in Venereal Distempers, 231. on what the salivating and antivenereal Virtue of Quickfilver depends, 236. is employ'd in several Arts, 238.

R

Realgar, 163. how corrected, 165.
Refins, how formed, 24.
Refins Pini alba, 351.
Rhabarbarum, 296.
Rhaponticum, 297.
Rhodium Lignum, 313.
Ricini Americani majoris grana, 331. minoris grana, ibid.
Ricini vulgaris grana, 332.
Ruby, 83.

S

Saccharum, 341. Sagapenum, 363.

Sago, 345.
Sal Ammoniac, 121. of two kinds, 122. how prepared, 123. its Viftues, 124. how purified, 125. the volatile Salt, urinous and acid Spirits of Sal Ammoniac, how obtained, ibid. when properly applied, 126. the Chemical Uses of Sal Ammoniac, 127.

Sal ex duobus, 104. Sal Polychrestus, 103.

Sal Volatile oleosum of Sylvius, 126.

Saleb, 297.

Salivation, how raised, 231 seq.
Salt, has no just Title to be called a Principle in Bodies, 7.
how formed, 9, 12. is of three kinds, 12. Acid Salt, wherein it consists, ibid. Acrid, or Alkaline Salt, its Nature, 13. Sal salsy, the third kind, compounded of Acid and Alkaline united together, 15. Salt, the most simple of all mix'd Bodies, 20. The Salts of Plants, differing from one another, 22. Of Alimentary Salt, 84. Sal Gem, 85. Sea Salt, 86. its Virtues, 88. the Decrepita-

tion of Salt, 89. Spirit of Salt, *ibid*.
Salt-Petre, whence obtained, 96. how diftinguish'd from other Salts, 98. its Virtues, 99. the feveral Preparations

of it, 102.
Sandaracha, 363.
Sanguis Draconis, 363.
Sanguis Hirci Alpini, 374.
San-Lucianum lignum, 313.
San-Marthanum lignum, 314.
Santalum, ibid.
Sapphire, 80.
Sarcocolla, 364.

Sardonyx, 78. Sarfaparilla, 297. Sassafras, 314. spurium, 315. Scammonium, 364.
Scincus marinus, 372.
Semen Santonicum, 332. Senna, 318. Serpentaria Virginiana, 297.

Silver, described, 272. where found, 273. how separated from the Ore, ibid. its Nature, 275. Preparations of Silver, 276. Lunar Crystals, ibid. Lapis Infernalis, 277. Tinctures of Silver, ibid.

Silverweed, the Analysis of its Roots, 36.

Sima Ruba, 298. Smyris, 176. Sory, 187.

Sperma Ceti, 386. Spirit, not properly a Principle in Bodies, 6.

Spirit of Salt, 89. its Virtues, 90.

Spirit of Sulphur, 157. Spirit of Vitriol, 111. Spodium, 185.

Squamma Æris Offic. 271. Staphidis agriæ femen, 332.

Steel, how made, 254. Steel-wine, 258. Preparations of

Steel, ibid.

Stones, the feveral Sorts of them, 65. the feveral precious Stones, that are used in Physick, 78. their Virtues, 81.

Styrax Calamita, 365. Styrax liquidus, 350.

Sulphur, does not deserve the Name of a Principle in Bo-

dies, 6. how formed, 9, 16.

Sulphur of the Shops, is native or factitious, 149. how distilled by M. Homberg, 151. three different Substances to be obtained from it, 152. artificial Sulphur, how made, 153. its Virtues, ibid. the Preparations of Sulphur, 155.

Sulphureous Substances, are fixed or volatile, 19.

Sympathetick Powder, 114.



T

Tacamahaca, 365. Tamarindi, 333. Talc, 67. Tartarum, 342. Telli grana, 332. Terebinthina, 350. Terra Japonica, 344. Thea Sinenfium, 319.

Tin, where found, and how extracted, 249. its Nature, 250. a Liquor perpetually smoking may be drawn from it, 251. Preparations of it, ibid. Sal Jovis, ibid. Anti-hecticum Poterii, 252. Aurum Mosaicum, ibid.

Toad-flax, the Analysis of its Leaves, 37.

Topaz, 82.

Tragacanthum, 366. Tubera Cervina, 368.

Tubuli Marini, in quibus Vermiculi delitescunt, 382.

Turbith Mineral, 225. Turpethum, 298. Tutty, 184.

V

Vegetable Substances, used in Physick, 284. Verdegrease, 270. Vesiculæ Moschatæ Orientales, 374.

Violaceum lignum, 315.

Vipera, 372.

Vitriol, the feveral Sorts of it, 106. how made, ibid. feq. its Chemical Effects, 108. its Virtues, 109. the Preparation of Vitriol, 110. Gilla of Vitriol, ibid. Spirit of Vitriol, 111.

Vitriol, 111. Vitriolated Tartar, 112. Umbilicus Marinus Belliricus, 382. Unguis Odoratus, 382.

Ungula Alcis, 387.

W

Water, strictly deserves the Name of a Principle, 8. its Nature, 10. wherefore sluid, 11. Simple or Mineral, 42. what Water the best, *ibid*. its Usefulness, 43. commended by some as a Remedy in Fevers, *ibid*. of Mineral Waters, 47.

Xvlo-

X

Xylo-Balfamum, 315.

Ž

Zedoary, 298.
Zibethum, 374.
Zinch, 210. the Manner of collecting it, 211. its Nature, 213.
Zinziber, 299.
Zopiffa, 352.



